FLOOD INSURANCE STUDY

RUSH COUNTY, INDIANA
AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
CARTHAGE, TOWN OF	180222
*GLENWOOD, TOWN OF	180454
RUSH COUNTY (Unincorporated Areas)	180421
RUSHVILLE, CITY OF	180223

*No Special Flood Hazard Area

Preliminary:

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
18139CV000A

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FLOOD INSURANCE STUDY
RUSH COUNTY, INDIANA AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and supersedes the FIS reports and Flood Insurance Rate Maps (FIRMs) in the geographic area of Rush County, Indiana, including the City of Rushville, the Towns of Carthage and Glenwood, and the unincorporated areas of Rush County (hereinafter referred to collectively as Rush County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. This information will also be used by Rush County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

Furthermore, the Town of Glenwood does not have special flood hazard areas within its incorporated limits. However, for the purpose of complete countywide mapping of Rush County, this town is still included in this FIS and FIRMs.

The Digital Flood Insurance Rate Map (DFIRM) and FIS report for this countywide study have been produced in digital format. Flood hazard information was converted to meet the Federal Emergency Management Agency (FEMA) DFIRM database specifications and Geographic Information System (GIS) format requirements. The flood hazard information was created and is provided in a digital format so that it can be incorporated into local GIS and be accessed more easily by the community.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

Information of the authority and acknowledgements for each of the new studies and previously printed FIS reports and Flood Insurance Rate Maps (FIRMs) for communities within Rush County was compiled and is shown below:

Rush County (Unincorporated Areas)	The hydrologic and hydraulic analyses for this study were prepared by Snell Environmental Group, Inc. for the Federal Emergency Management Agency (FEMA), under Contract No. H-4777. This study, which was completed in December 1980, covered all significant flooding sources affecting the unincorporated areas of Rush County.
Rushville, City of:	The hydrologic and hydraulic analyses for this study were prepared by Snell Environmental Group, Inc. for the Federal Emergency Management Agency (FEMA), under Contract No. H-4777. This study, which was completed in Febuary 1981, covered all significant flooding sources affecting the City of Rushville.
Carthage, Town of:	The hydrologic and hydraulic analyses for this study were taken from the Unincorporated Areas of the County of Rush, Indiana Flood Insurance Study.
Glenwood, Town of:	No previous FIS.
New Studies:	The hydrologic and hydraulic analyses for approximate stream reaches of Rush County were performed by AMEC Earth and Environmental, Inc., on behalf of the Indiana Department of Natural Resources, under Indiana Public Works Project Number E060019. The Indiana Department of Natural Resources managed the production of this study as part of their Cooperating Technical Partner agreement with the Federal Emergency Management Agency dated April 29, 2004, which was defined by the Indiana DNR Mapping Activity Statement 08-01 dated July 7, 2008 and funded under agreement number EMC-2007-CA-7027.

Redelineation of the previously effective flood hazard information for this FIS report, correction to the North American Vertical Datum of 1988, and conversion of the unincorporated and incorporated areas of Rush County into the Countywide format was performed by AMEC Earth and Environmental, Inc., on behalf of the Indiana Department of Natural Resources, under Indiana Public Works Project Number E060019. The Indiana Department of Natural Resources managed the production of this study as part of their Cooperating Technical Partner agreement with the Federal Emergency Management Agency dated April 29, 2004, which was defined by the Indiana DNR Mapping Activity Statement 08-01 dated July 7, 2008 and funded under agreement number EMC-2007-CA-7027.

1.3 Coordination

The purpose of an initial Consultation Coordinated Officer's (CCOs) meeting is to discuss the scope of the FIS. A final CCO meeting is held to review the results of the study. The dates of the initial and final CCO meetings held for the previously effective FIS reports covering the geographic area of Rush County, Indiana are shown in Table 1. The initial and final CCO meetings were attended by the study contractor, FEMA (or the Federal Insurance Administration), the Indiana Department of Natural Resources (IDNR), and the affected communities.

Table 1: CCO Meeting Dates for Pre-Countywide FIS

Community Name	Initial CCO Date	Final CCO Date
Rush County (Unincorporated Areas)	*	December 8, 1981
Rushville, City of (original)	*	December 8, 1981
Carthage, Town of	*	December 2, 1982

*Data Not Available

For this countywide FIS, an initial CCO meeting was held on August 29, 2007, and was attended by IDNR, the Rush County Commission, the Rush County Area Plan Commission, the Rush County Auditor, the Rush County GIS Specialist, the Rush County Board of Supervisors, the Rush County Surveyor, the Glenwood Council, and the City of Rushville.

The results of the countywide study were reviewed at the final CCO meeting held on --, and attended by representatives of FEMA, IDNR and_____. All problems raised at that meeting have been addressed.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Rush County, Indiana, including the incorporated communities listed in Section 1.1.

All FIRM panels for Rush County have been revised, updated, and republished in countywide format as a part of this FIS. The FIRM panel index, provided as Exhibit 2, illustrates the revised FIRM panel layout.

Approximate methods of analysis were used to study those areas having a low development potential or minimal flood hazards as identified during the initial CCO meeting. For this study, seven new stream reaches were studied using approximate methods. The scope and methods of new approximate studies were proposed and agreed upon by FEMA, the IDNR, and Rush County.

This FIS update also incorporates the determination of letters issued by FEMA resulting in map changes (Letters of Map Change, or LOMC's). All Letters of Map Revision (LOMR's) are summarized in Table 2. Letters of Map Amendment (LOMA's) incorporated for this study are summarized in the Summary of Map Actions (SOMA) included in the Technical Support Data Notebook (TSDN) associated with this FIS update. Copies of the TSDN may be obtained from the Community Map Repository.

Table 2: Incorporated Letters of Map Change

LOMC	Case Number	Date Issued	Project Identifier
LOMR	01-05-372P	7/20/2001	Rushville Levee and Floodwall

Table 3: Streams Previously Studied by Detailed Methods

Big Blue River	Hodges Branch
Charlottes Brook	Six Mile Creek
Flatrock River	Three Mile Creek
Goose Creek	

Table 4: Streams Previously Studied by Approximate Methods

Ben Davis Creek	Miles Creek
Bob Creek	Mud River
Buck Creek	North Branch Clifty Creek
Conns Creek	Shankatank Creek
Flatrock River	Shawnee Creek

Table 4: Streams Previously Studied by Approximate Methods (cont'd)

Hurricane Creek	Tributary to Bob Creek
Lick Creek	Turkey Creek
Little Blue River	Wikoff Ditch
Little Flatrock River	

Table 5: Scope of Study

Stream	Limits of Approximate Study
Flatrock River	Decatur Co Line to County Road 350S
Flatrock River	County Road 300N to Henry Co Line
Lick Creek	Mouth to County Road 160E
Little Blue River	Shelby County Line to Newhouse Ditch
Little Flatrock River	Decatur Co Line to County Road 300S
Mud Creek	Mouth to Base Line Road
North Branch Clifty Creek	Mouth to County Road 450E
Stream	Limits of Redelineation Study
Big Blue River	Shelby Co Line to Henry Co Line
Flatrock River	County Road 350S to County Road 300N
Hodges Branch	9th St to State Road 3

2.2 Community Description

Rush County is located in east-central Indiana and is bordered by Henry County to the north, Fayette and Franklin Counties to the east, Decatur County to the south, Shelby County to the west and Hancock County to the northwest. The total land area within the county is approximately 408.3 square miles. The largest city and the county seat is Rushville which is located approximately 40 miles southeast of Indianapolis. Rush County is served by US Highway 52, and State Routes 3, 44, and 244.

The climate in Rush County ranges from hot and humid in the summertime to cold during the winter season. Average daytime temperatures during the summer fall around 71.9ºF, while winter temperatures average at approximately 32.9ºF. Precipitation for Rush County totals an annual amount of 42.36 inches.

According to U.S. Census Data from the year 2000, the population of Rush County was reported to be 18,261. Table 6 lists the population of the incorporated areas in Rush County.

Table 6: Population of incorporated cities and towns in Rush County 2000 Census

Community	Population
Carthage, Town of	928
Glenwood, Town of	318
Rushville, City of	5,995

2.3 Principal Flood Problems

Major flooding in Rush County primarily occurs along the Big Blue River and the Flatrock River. Floods principally occur during the winter and spring months, but can occur during any season. Generally, two types of storm events cause flooding. During the winter and spring, storms of moderate intensity and long duration, coupled with frozen ground, cause flooding to occur. During the summer, thunderstorms which have high intensities and relatively short durations can cause floods. Localized flood problems in the incorporated areas are summarized below:

Carthage, Town of: Subject to flooding from the Big Blue River. The largest recorded flood on record at Carthage was in March of 1963. The discharges and frequencies of these floods are as follows:

Table 7: Flood Crest Elevations
USGS gage for the Big Blue River in Carthage

Date	Discharge Cubic Feet Per Second (CFS)	Elevation (feet, gage datum)
March 4, 1963	12,900	14.62
November 14, 1993	8,410	12.91
January 21, 1959	8,340	13.28
December 30, 1990	7,510	12.31
June 14, 1958	7,020	12.42
February 21, 1958	6,650	11.20

Rushville, City of: Major floods along the Flatrock River occurred in 1949 with 18,500 cubic feet per second (CFS), 1963 with 17,111 (CFS) and 1968 with 17, 600 (CFS) per the St. Paul gaging station. The discharges and frequencies of floods along the Flatrock River at the gaging station in Milroy are as follows:

Table 8: Flood Crest Elevations
USGS gage for the Flatrock River at Milroy

Date	Discharge Cubic Feet Per Second (CFS)	Elevation (feet, gage datum)
April 30, 1983	5,320	15.22
May 26, 1989	5,060	15.04
April 23, 1981	2,260	13.81
March 14, 1978	1,600	11.97
February 23, 1985	1,470	11.58
June 6, 1986	1,200	11.12

2.4 Flood Protection Measures

At the time the 1982 FIS for Rush County was published, a project called the "Upper Big Blue River Flood Control Project" was underway. Several structures were built in Rush County as well as other counties. This project was sponsored by the U.S. Department of Agriculture, Soil Conservation Service (SCS).

In 2001, the City of Rushville implemented a levee maintenance program for a levee system located between 0.6 miles downstream of U.S. Route 52 and 0.7 miles upstream of the Chessie System along the Flatrock River. Please refer to the corresponding Flood Insurance Rate Map panels for the protection status of this levee system. No other flood control measures exist within the City of Rushville, the Towns of Carthage and Glenwood, and the unincorporated areas of Rush County

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in Rush County, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 1-percent-annual-chance flood in any 50-year period is approximately 40 percent (4 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by detailed methods affecting Rush County. Table 9 contains a summary of peak discharges for the 10-, 2-, 1-, and 0.2-percent annual chance floods, where applicable, for each flooding source studied in detail in Rush County. Peak discharges in the table were compiled from previously effective FIS reports for Rush County and incorporated areas.

Table 9. Summary of Discharges

Flooding Source And Location	Drainage Area (Square Miles)	Peak Discharge (CFS) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
BIG BLUE RIVER					
Upstream of Six Mile Creek	196	8,400	11,800	13,300	15,400
County Road 800 North	188	8,000	11,600	13,100	15,000
Upstream of Three Mile Creek	161	6,900	9,600	11,000	12,500
Upstream of Montgomery Creek	134	5,600	7,700	8,800	10,000
CHARLOTTES BROOK					
Mouth	3.7	1,170	1,630	1,840	2,320
About 0.8 Miles Upstream of Mouth	2.6	960	1,380	1,550	1,920
FLATROCK RIVER					
County Road 350 South	180	10,750	15,750	17,800	23,000
At Conrail	168	10,200	15,000	17,100	22,000
Upstream of Ben Davis Creek	140	9,100	13,400	15,250	19,500
0.2 Miles Downstream of County Road 300 North	135	8,900	13,000	14,950	19,000
GOOSE CREEK					
Mouth	7.2	855	1,230	1,445	1,900
About 1.2 Miles Upstream Of Mouth	5.9	130	320	460	860
Upstream of Big Blue Dam Number 2	5.0	1,350	1,900	2,150	2,700
About 0.7 Miles Upstream Of Big Blue Dam No. 2	4.0	1,200	1,700	1,910	2,400

Table 9. Summary of Discharges (Cont'd)

Flooding Source And Location	Drainage Area (Square Miles)	Peak Discharge (CFS) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
HODGES BRANCH					
At End of Culvert Upstream Of 9th Street	1.7	510	1,000	1,220	1,830
About 325 Feet Downstream Of Main Street	1.2	370	720	900	1,350
SIX MILE CREEK					
Mouth	45.6	4,200	5,900	6,600	8,600
County Road 800 North	44.0	4,100	5,800	6,500	8,400
0.3 Miles Downstream of County Road 900 North	41.1	3,950	5,550	6,250	8,100
Upstream of Dilly Brook	32.8	3,500	5,000	5,600	7,200
Upstream of Miles Creek	30.0	3,380	4,750	5,370	6,900
Upstream of Unnamed Tributary North of County Road 1000 North	28.6	3,300	4,600	5,200	6,700
Upstream of Charlottes Brook	24.7	3,050	4,300	4,750	6,200
THREE MILE CREEK					
Mouth	13.0	235	250	257	264
Upstream of Big Blue Dam No. 3	11.4	2,050	2,900	3,250	4,200
About 1,800 Feet Downstream Of Campground Dam	10.0	1,920	2,700	3,050	3,900
About 2,000 Feet Downstream Of County Road 310 West	9.0	1,800	2,560	2,900	3,700
County Road 450 West	8.0	1,700	2,400	2,700	3,500
County Road 250 West	6.6	1,550	2,200	2,480	3,180

Standard and accepted hydrologic methods were used to develop discharge data on the study streams in Rush County. These data were coordinated with the Indiana Department of Natural Resources, the Natural Resources Conservation Service (formally the Soil Conservation Service), the U. S. Geological Survey and the Louisville District of the U. S. Army Corps of Engineers, through a Memorandum Of Understanding dated May 6, 1976. Discharge curves for the 10%, 2%, 1%, and 0.2% annual chance floods were developed for each study stream using several different procedures and compared for consistency.

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the Flood Insurance Rate Map (FIRM) represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data table in the FIS report. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS report in conjunction with the data shown on the FIRM.

Cross sections for the backwater analyses were obtained from a variety of sources including: physical survey data, IDNR contour mapping, USGS topographic mapping and local contour mapping.

Water-surface elevations for floods of the selected recurrence intervals were computed through use of the USACE HEC-2 step-backwater computer program. For the new approximate study reaches, the USACE HEC-RAS program was used. HEC-RAS is an updated version of the HEC-2 program used to perform step-backwater analyses.

Flood profiles were prepared for all streams studied by detailed methods and show computed water-surface elevations to an accuracy of 0.5 feet for floods of the selected recurrence intervals. For this countywide FIS, flood profiles and approved LOMRs have been consolidated into continuous stream reaches and adjusted to reflect the current vertical datum as described in Section 3.3.

The starting water-surface elevations for Big Blue River and Six Mile Creek were obtained from the concurrent downstream study for Hancock County. The Flatrock River, Goose Creek, Hodges Branch, and Three Mile Creek starting water-surface elevations were derived using the slope-area method. Starting elevations for Charlottes Brook were taken from Six Mile Creek assuming coincident flood peaks.

High water marks of historic floods were used where available to calibrate the hydraulic computer models. Elevations of the 1959 flood on the Flatrock River, approximately a 10% Annual Chance event, and the 1963 flood on the Big Blue River, approximately a 1% Annual Chance event, were used for calibration. No high water records were available for other watercourses studied in detail in this report.

Channel and overbank roughness factors (Manning's "n" values) used in the hydraulic computations were chosen by engineering judgment and were based on field observations of the stream and floodplain areas. Factors were estimated by field inspection with the aid of "n" value tables and equations. Channel and overbank roughness factors used in the detailed studies are summarized by stream in Table 10

Table 10. Channel and Overbank Roughness Factors

	Roughness Coefficients		
Stream	Main Channel	Left Overbank	Right Overbank
Big Blue River	0.040-0.060	0.040-0.120	0.040-0.120
Charlottes Brook	0.035-0.070	0.040-0.095	0.040-0.095
Flatrock River (Rush Co.)	0.035-0.060	0.025-0.095	0.025-0.095
Flatrock River (Rushville)	0.023-0.060	0.025-0.095	0.025-0.095
Goose Creek	0.035-0.070	0.040-0.095	0.040-0.095
Hodges Branch	0.03	0.03-0.055	0.03-0.055
Six Mile Creek	0.035-0.070	0.040-0.095	0.040-0.095
Three Mile Creek	0.035-0.070	0.040-0.095	0.040-0.095

For new approximate study areas, analyses were based on field inspection and modeling of the stream reaches using simplified HEC-RAS models. Structural measurements or field surveying was not performed. Cross section geometry was derived from topographic mapping from the 2005 statewide orthophotography project. Starting elevations were assumed to be normal depth.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the Flood Profiles (Exhibit 1) are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

3.3 Vertical Datum

All FIS reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the finalization of the North American Vertical Datum of 1988 (NAVD88), many FIS reports and FIRMs are being prepared using NAVD88 as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD88. Structure and ground elevations in the community must, therefore, be referenced to NAVD88. It is important to note that adjacent communities may be referenced to NGVD29. This may result in differences in Base Flood Elevations (BFEs) across the corporate limits between the communities.

In this revision, a vertical datum conversion of -0.41 feet was calculated at the centroid of the county and used to convert all elevations in Rush County from NGVD29 to NAVD88 using the National Geologic Survey's VERTCON online utility (VERTCON, 2005).

(NGVD29 – 0.41 = NAVD88)

For more information on NAVD88, see the FEMA publication entitled Converting the National Flood Insurance Program to the North American Vertical Datum of 1988 (FEMA, June 1992), or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Rockville, Maryland 20910 (Internet address http://www.ngs.noaa.gov).

The coordinate system used for the production of the digital FIRMs is the Transverse Mercator projection, Indiana State Plane coordinate system, East Zone, referenced to the North American Datum of 1983 and the GRS 1980 spheroid.

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook associated with the FIS report and FIRM for this community. Interested individuals may contact FEMA to access these data.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each FIS provides 1-percent-annual-chance flood elevations and delineations of the 1- and 0.2-percent-annual-chance floodplain boundaries and 1-percent-annual-chance floodway to assist communities in developing floodplain management measures. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles, and the Floodway Data table. Users should reference the data presented in the FIS report as well as additional information that may be available at the local map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the community. For each stream studied by detailed methods, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic mapping from the 2005 statewide orthophotography flight.

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A, AE, V, and VE); and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent-

annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 1-percent-annual chance floodplain boundary is shown on the FIRM (Exhibit 2).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

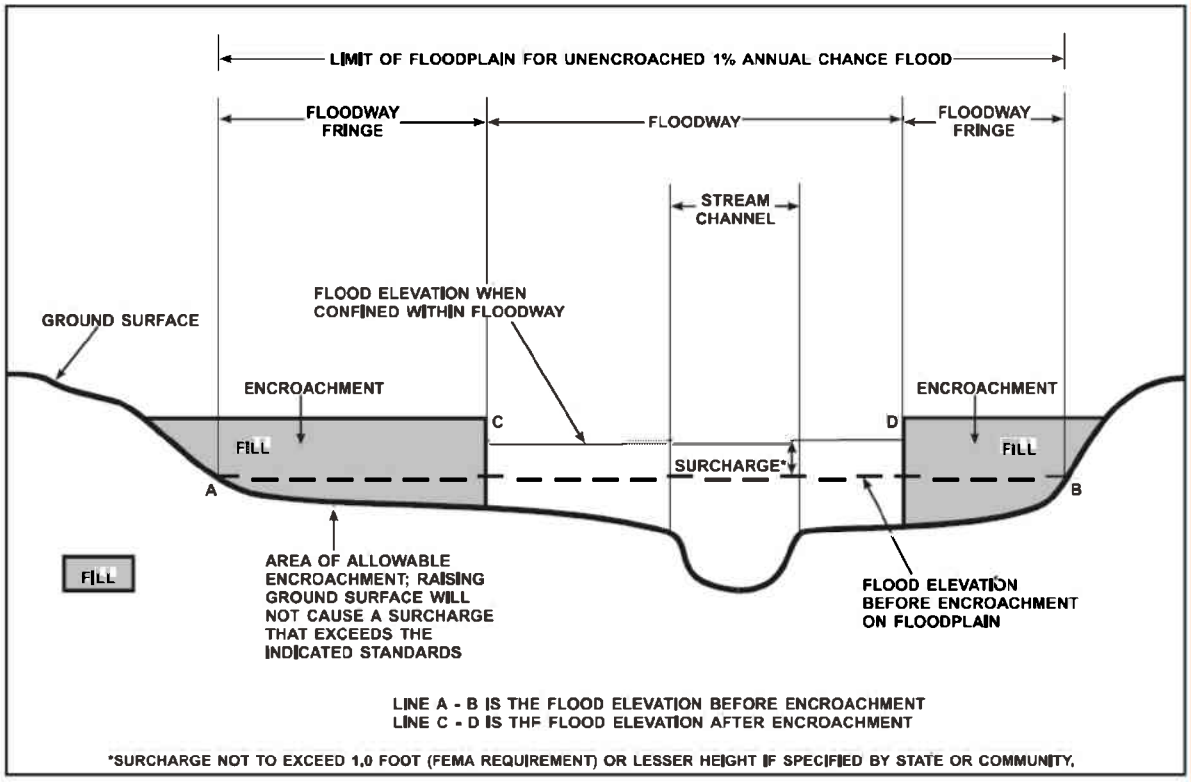
The State of Indiana, however, per Indiana Code IC 14-28-1 and Indiana Administrative Code 312 IAC 10, has designated that encroachment in the floodplain is limited to that which will cause no significant increase in flood height. As a result, floodways for this study are delineated based on a flood surcharge of less than 0.15 feet. The floodways in this study were approved by the IDNR, and are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodway presented in this FIS report and on the FIRM was computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations have been tabulated for selected cross sections (Table 11). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent-annual-chance flood more than 0.14 foot at any point.

Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.

Figure 1: Floodway Schematic



FLOODING SOURCE		FLOODWAY			1- PERCENT ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[3] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
BIG BLUE RIVER								
A	45.70	1,030	2,154	6.2	850.7	850.7	850.7	0.0
B	45.84	1,138	7,009	1.9	852.0	852.0	852.0	0.0
C	46.00	1,246	9,895	1.3	852.2	852.2	852.2	0.0
D	46.15	1,283	7,580	1.8	852.4	852.4	852.4	0.0
E	46.30	1,460	7,356	1.8	852.7	852.7	852.7	0.0
F	46.57	1,476	7,003	1.9	853.1	853.1	853.1	0.0
G	46.81	1,220	4,456	3.0	853.7	853.7	853.7	0.0
H	46.90	1,432	6,841	1.9	854.3	854.3	854.3	0.0
I	47.16	1,190	5,004	2.7	854.8	854.8	854.8	0.0
J	47.28	1,427	7,249	1.8	855.7	855.7	855.7	0.0
K	47.49	1,649	10,928	1.2	856.2	856.2	856.2	0.0
L	47.60	1,770	8,370	1.6	856.6	856.6	856.6	0.0
M	47.81	1,369	11,100	1.2	857.2	857.2	857.2	0.0
N	47.92	1,665	5,684	2.0	857.5	857.5	857.5	0.0
O	48.20	1,279	7,072	1.9	859.5	859.5	859.5	0.0
P	48.40	1,084	5,592	2.4	860.1	860.1	860.1	0.0
Q	48.57	1,261	6,178	2.2	860.8	860.8	860.8	0.0
R	48.66	1,150	5,867	2.3	861.1	861.1	861.1	0.0
S	49.04	1,154	4,815	2.8	862.0	862.0	862.0	0.0
T	49.13	1,213	5,118	2.6	862.8	862.8	862.8	0.0
U	49.37	1,490	5,337	2.5	863.6	863.6	863.6	0.0
V	49.39	1,121	5,197	2.5	863.8	863.8	863.8	0.0
W	49.45	1,200	4,596	2.9	864.2	864.2	864.2	0.0
X	49.64	1,175/900[2]	2,065	6.3	866.4	866.4	866.4	0.0
Y	49.75	1,145/900[2]	2,422	5.4	869.1	869.1	869.1	0.0
Z	49.90	1,190	3,065	4.3	870.4	870.4	870.4	0.0

[1] Miles Above Mouth

[2] Total Width/Width Within Unincorporated Area

[3] Floodway Width May Differ From DFIRM. See DFIRM For Regulatory Width

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

BIG BLUE RIVER

FLOODING SOURCE		FLOODWAY			1- PERCENT ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[3] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
BIG BLUE RIVER								
AA	50.10	1,210/1,050[2]	4,117	3.2	872.2	872.2	872.2	0.0
AB	50.26	1,275/1,100[2]	10,856	1.2	872.6	872.6	872.6	0.0
AC	50.53	1,100	2,821	4.6	872.6	872.6	872.6	0.0
AD	50.61	1,165/1,100[2]	2,984	4.4	873.4	873.4	873.4	0.0
AE	50.70	1,252/1,100[2]	3,257	4.0	873.7	873.7	873.7	0.0
AF	50.95	1,218/1,150[2]	10,053	1.3	874.5	874.5	874.5	0.0
AG	51.23	1,895	2,917	4.5	875.2	875.2	875.2	0.0
AH	51.38	1,435	6,375	2.1	875.7	875.7	875.7	0.0
AI	51.70	1,166	7,174	1.8	876.2	876.2	876.2	0.0
AJ	52.00	1,129	6,578	2.0	876.7	876.7	876.7	0.0
Ak	52.23	1,182	5,939	2.2	877.4	877.4	877.4	0.0
AL	52.50	1,180	4,852	2.7	878.5	878.5	878.5	0.0
AM	52.71	1,093	2,960	4.4	879.9	879.9	879.9	0.0
AN	53.08	1,563	7,312	1.5	883.1	883.1	883.1	0.0
AO	53.26	1,212	3,989	2.8	884.1	884.1	884.1	0.0
AP	53.48	1,207	4,020	2.7	885.0	885.0	885.0	0.0
AQ	53.66	1,204	6,375	1.7	885.9	885.9	885.9	0.0
AR	53.93	1,248	3,714	3.0	886.5	886.5	886.5	0.0
AS	54.22	1,367	3,445	3.2	888.9	888.9	888.9	0.0
AT	54.64	1,586	8,589	1.3	890.0	890.0	890.0	0.0
AU	54.86	1,840	9,102	1.2	890.2	890.2	890.2	0.0
AV	55.15	1,420	7,035	1.3	890.6	890.6	890.6	0.0
AW	55.34	1,410/650[2]	4,810	1.8	891.2	891.2	891.2	0.0
AX	55.43	1,185/200[2]	4,856	1.8	891.4	891.4	891.4	0.0

[1] Miles Above Mouth

[2] Total Width/Width Within Unincorporated Area

[3] Floodway Width May Differ From DFIRM. See DFIRM For Regulatory Width

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

BIG BLUE RIVER

FLOODING SOURCE		FLOODWAY			1- PERCENT ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1,4]	WIDTH[3] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
CHARLOTTES BROOK								
A	367	900 [2]	2,042	2.3	915.5	915.5	915.5	0.0
B	1,587	406	986	1.9	918.6	918.6	918.6	0.0
C	2,457	216	1,002	1.8	918.9	918.9	918.9	0.0
D	3,357	67	233	7.9	921.0	921.0	921.0	0.0
E	4,177	266	537	2.9	929.5	929.5	929.5	0.0
F	5,492	201	407	3.8	935.0	935.0	935.0	0.0
G	7,612	237	528	2.9	942.2	942.2	942.2	0.0
H	8,427	224	442	3.5	945.4	945.4	945.4	0.0
I	9,807	220	425	3.6	950.2	950.2	950.2	0.0
FLATROCK RIVER								
A	53.18	1,483	6,307	2.8	936.5	936.5	936.5	0.0
B	53.42	1,721	7,805	2.3	937.4	937.4	937.4	0.0
C	54.19	2,100	11,522	1.5	939.2	939.2	939.2	0.0
D	55.14	1,900	8,088	2.2	941.0	941.0	941.0	0.0
E	55.63	1,849	8,830	2.0	942.5	942.5	942.5	0.0
F	55.99	1,968	9,870	1.8	943.6	943.6	943.6	0.0
G	56.73	1,972	9,974	1.8	945.3	945.3	945.3	0.0
H	57.29	2,242	10,327	1.7	946.3	946.3	946.3	0.0
I	57.68	1,695	8,585	2.1	947.2	947.2	947.2	0.0
J	58.11	842	4,514	3.8	949.1	949.1	949.1	0.0
K	58.48	510 *	1,392	7.4	952.8	952.8	952.8	0.0
L	58.63	380 *	2,607	3.9	953.3	953.3	953.3	0.0
M	58.68	378 *	3,514	4.9	953.8	953.8	953.8	0.0
N	58.97	1,120 *	9,166	1.9	955.1	955.1	955.1	0.0
O	59.09	2,000 *	6,819	2.5	955.3	955.3	955.3	0.0
P	59.31	1,880 *	6,399	2.7	955.4	955.4	955.4	0.0
Q	59.42	2,220 *	3,039	5.6	955.4	955.4	955.4	0.0
R	59.53	2,400 *	8,921	1.9	956.0	956.0	956.0	0.0
S	59.73	2,380 *	3,099	5.5	956.2	956.2	956.2	0.0

[1] Feet Above Confluence With Six Mile Creek - Charlottes Brook

[2] Combined Floodway Width Of Six Mile Creek and Charlottes Brook

[3] Floodway Width May Differ From DFIRM. See DFIRM For Regulatory Width

[4] Miles Above Mouth - Flatrock River

* These Widths Consider Adjustments Made To Ensure Compliance With FEMA Policy Regarding The Mapping Of Floodways On Levees

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

CHARLOTTES BROOK/FLATROCK RIVER

FLOODING SOURCE		FLOODWAY			1- PERCENT ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
FLATROCK RIVER								
T	59.88	2,172	18,763	0.9	956.9	956.9	956.9	0.0
U	60.70	1,909	10,627	1.6	957.4	957.4	957.4	0.0
V	61.06	2,223	11,401	1.5	958.4	958.4	958.4	0.0
W	61.64	2,231	10,027	1.7	960.1	960.1	960.1	0.0
X	62.09	1,660	4,263	4.0	961.6	961.6	961.6	0.0
Y	62.20	1,115	6,875	2.2	962.6	962.6	962.6	0.0
Z	62.26	813	3,496	4.4	962.7	962.7	962.7	0.0
AA	62.92	754	4,284	3.6	964.5	964.5	964.5	0.0
AB	62.84	1,163	3,755	4.1	965.2	965.2	965.2	0.0
AC	63.33	1,640	9,276	1.6	965.8	965.8	965.8	0.0
AD	63.87	1,620	8,605	1.7	966.4	966.4	966.4	0.0
AE	64.05	1,552	5,079	2.9	966.6	966.6	966.6	0.0
GOOSE CREEK								
A	0.71	600	348	4.2	878.2	878.2	878.2	0.0
B	1.00	380	659	2.2	883.3	883.3	883.3	0.0
C	1.20	328	584	2.5	887.9	887.9	887.9	0.0
D	1.40	290	338	1.4	890.0	890.0	890.0	0.0
E	1.60	210	269	1.7	895.0	895.0	895.0	0.0
F	1.81	54	146	3.2	898.7	898.7	898.7	0.0
G	1.90	70	191	2.4	900.5	900.5	900.5	0.0
H	2.11	28	90	5.1	904.0	904.0	904.0	0.0
I	2.18	138	176	2.6	905.3	905.3	905.3	0.0

[1] Miles Above Mouth

[2] Floodway Width May Differ From DFIRM. See DFIRM For Regulatory Width

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

FLATROCK RIVER/GOOSE CREEK

FLOODING SOURCE		FLOODWAY			1- PERCENT ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1,2]	WIDTH[4] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
HODGES BRANCH								
A	0	330	907	1.3	966.7	966.7	966.7	0.0
B	420	400	961	1.3	967.3	967.3	967.3	0.0
C	880	405	450	2.7	968.7	968.7	968.7	0.0
D	1,450	505	817	1.5	970.1	970.1	970.1	0.0
E	1,738	510	32	3.8	970.3	970.3	970.3	0.0
F	2,021	545	697	1.8	971.1	971.1	971.1	0.0
G	2,241	595	1,251	1.0	971.4	971.4	971.4	0.0
H	3,011	255	563	2.2	971.7	971.7	971.7	0.0
I	3,336	158	352	2.4	972.0	972.0	972.0	0.0
J	3,661	380	167	5.4	972.0	972.0	972.0	0.0
SIX MILE CREEK								
A	8,896	98	812	8.1	858.9	858.9	858.9	0.0
B	9,996	487	2852	2.3	860.7	860.7	860.7	0.0
C	12,196	940	3379	2.0	862.8	862.8	862.8	0.0
D	12,802	752	2,062	3.2	863.5	863.5	863.5	0.0
E	14,032	672	2,512	2.6	865.8	865.8	865.8	0.0
F	23,533	171	1,200	4.7	883.0	883.0	883.0	0.0
G	25,563	739	3,154	1.8	884.3	884.3	884.3	0.0
H	27,363	767	2,619	2.1	885.4	885.4	885.4	0.0
I	29,393	640	1,176	4.9	887.4	887.4	887.4	0.0
J	28,618	809	2,267	2.5	888.5	888.5	888.5	0.0
K	31,068	980	1,945	2.8	892.5	892.5	892.5	0.0
L	32,348	572	1,494	3.6	895.6	895.6	895.6	0.0
M	33,207	663	1,711	3.1	898.2	898.2	898.2	0.0
N	36,367	920	1,874	2.9	903.7	903.7	903.7	0.0
O	38,447	652	1,368	3.8	908.2	908.2	908.2	0.0
P	41,047	529	1,426	3.6	913.4	913.4	913.4	0.0
Q	41,396	900 [3]	2,042	3.1	915.1	915.1	915.1	0.0

[1] Feet Above Culvert Inlet At 9th Street - Hodges Branch
[2] Feet Above Mouth - Six Mile Creek
[3] Combined Floodway Width Of Six Mile Creek And Charlottes Brook
[4] Floodway Width May Differ From DFIRM. See DFIRM For Regulatory Width

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN AND INCORPORATED AREAS

FLOODWAY DATA

HODGES BRANCH/SIX MILE CREEK

FLOODING SOURCE		FLOODWAY			1- PERCENT ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
SIX MILE CREEK								
R	42,666	403	933	5.1	916.5	916.5	916.5	0.0
S	45,264	714	2,372	2.0	921.7	921.7	921.7	0.0
T	47,316	500	1,703	2.8	925.8	925.8	925.8	0.0
U	48,296	520	1,718	2.8	926.8	926.8	926.8	0.0
THREE MILE CREEK								
A	12,672	313	1,003	3.0	929.6	929.6	929.6	0.0
B	14,098	55	396	7.7	937.0	937.0	937.0	0.0
C	14,309	238	869	3.5	937.9	937.9	937.9	0.0
D	15,946	306	764	3.8	942.9	942.9	942.9	0.0
E	18,058	326	1,104	2.6	948.8	948.8	948.8	0.0
F	18,744	375	1,108	2.6	950.4	950.4	950.4	0.0
G	20,011	300	284	10.2	956.8	956.8	956.8	0.0
H	22,440	362	1,190	2.4	963.2	963.2	963.2	0.0
I	23,549	300	325	8.9	968.1	968.1	968.1	0.0
J	25,238	525	1,752	1.7	971.7	971.7	971.7	0.0
K	25,555	466	1,358	2.1	973.0	973.0	973.0	0.0
L	28,565	326	933	2.9	977.9	977.9	977.9	0.0
M	29,410	317	1,116	2.4	980.7	980.7	980.7	0.0
N	30,043	265	1,183	2.1	984.7	984.7	984.7	0.0
O	31,258	477	1,285	1.9	985.6	985.6	985.6	0.0
P	32,947	467	875	2.8	987.9	987.9	987.9	0.0

[1] Feet Above Mouth
[2] Floodway Width May Differ From DFIRM. See DFIRM For Regulatory Width

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

SIX MILE CREEK/THREE MILE CREEK

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no BFEs or base flood depths are shown within this zone.

Zone AE

Zone AE is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance risk zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, and areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by levees. No BFEs or base flood depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance risk zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use the zones and BFEs in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent-annual-chance floodplains, floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The current FIRM presents flooding information for the entire geographic area of Rush County. Previously, separate FIRMs were prepared for each identified flood prone incorporated community and for the unincorporated areas of the county. Historical data relating to the maps prepared for each community are presented in Table 12.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Carthage, Town of	November 23, 1973	April 16, 1976	November 2, 1983	None
*Glenwood, Town of	N/A	None	N/A	None
Rush County (Unincorporated Areas)	June 3, 1977	None	December 1, 1982	None
Rushville, City of	December 7, 1973	June 11, 1976	November 3, 1982	None

*No Special Flood Hazard Area

TABLE 12

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

This FIS report either supersedes or is compatible with all previous studies on streams studied in this report and should be considered authoritative for purposes of the NFIP.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Flood Insurance and Mitigation Division, Federal Emergency Management Agency, Region V, 536 S. Clark Street, 6th Floor, Chicago, IL 60605

9.0 BIBLIORAPHY AND REFERENCES

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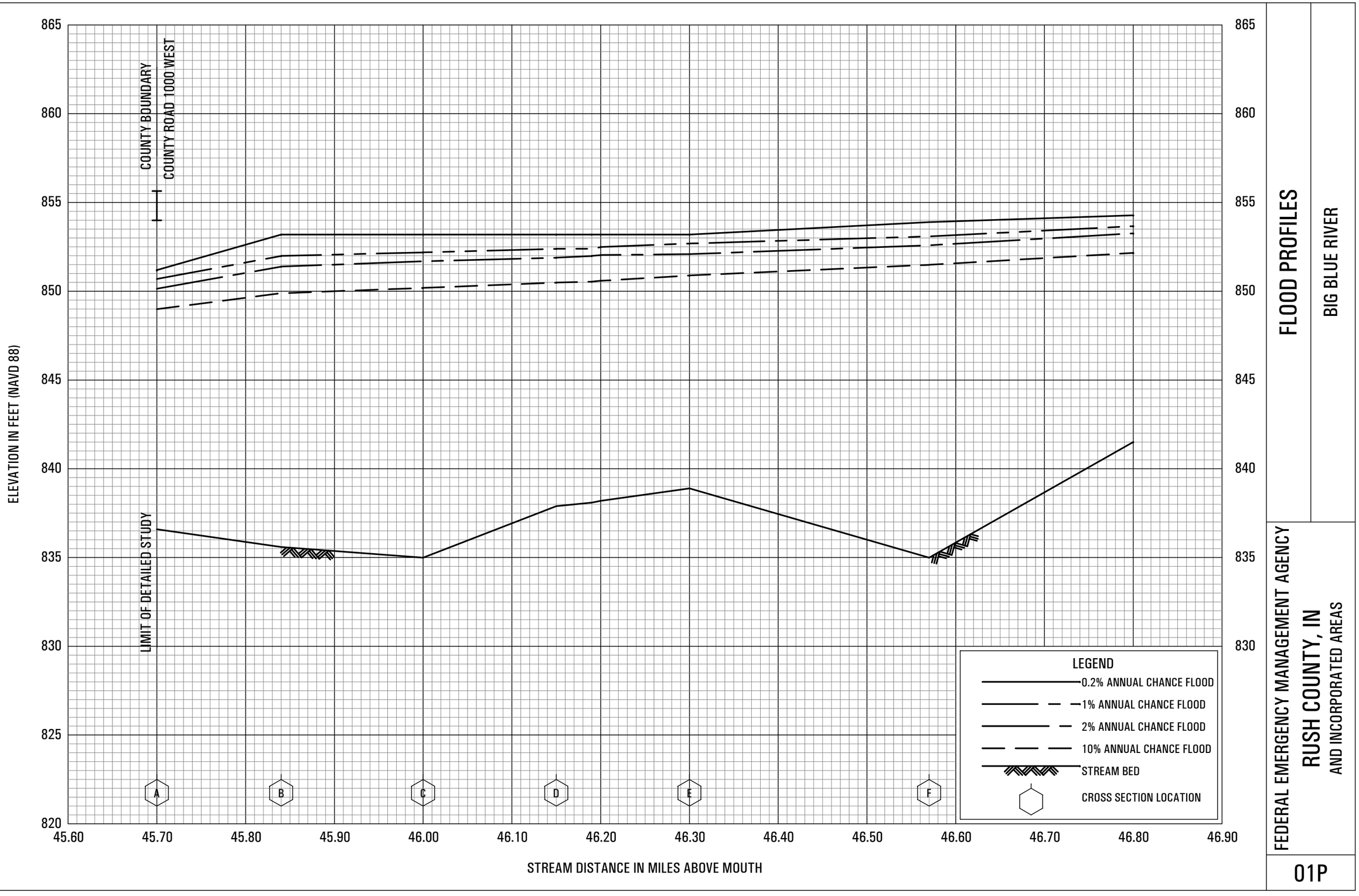


FLOOD PROFILES

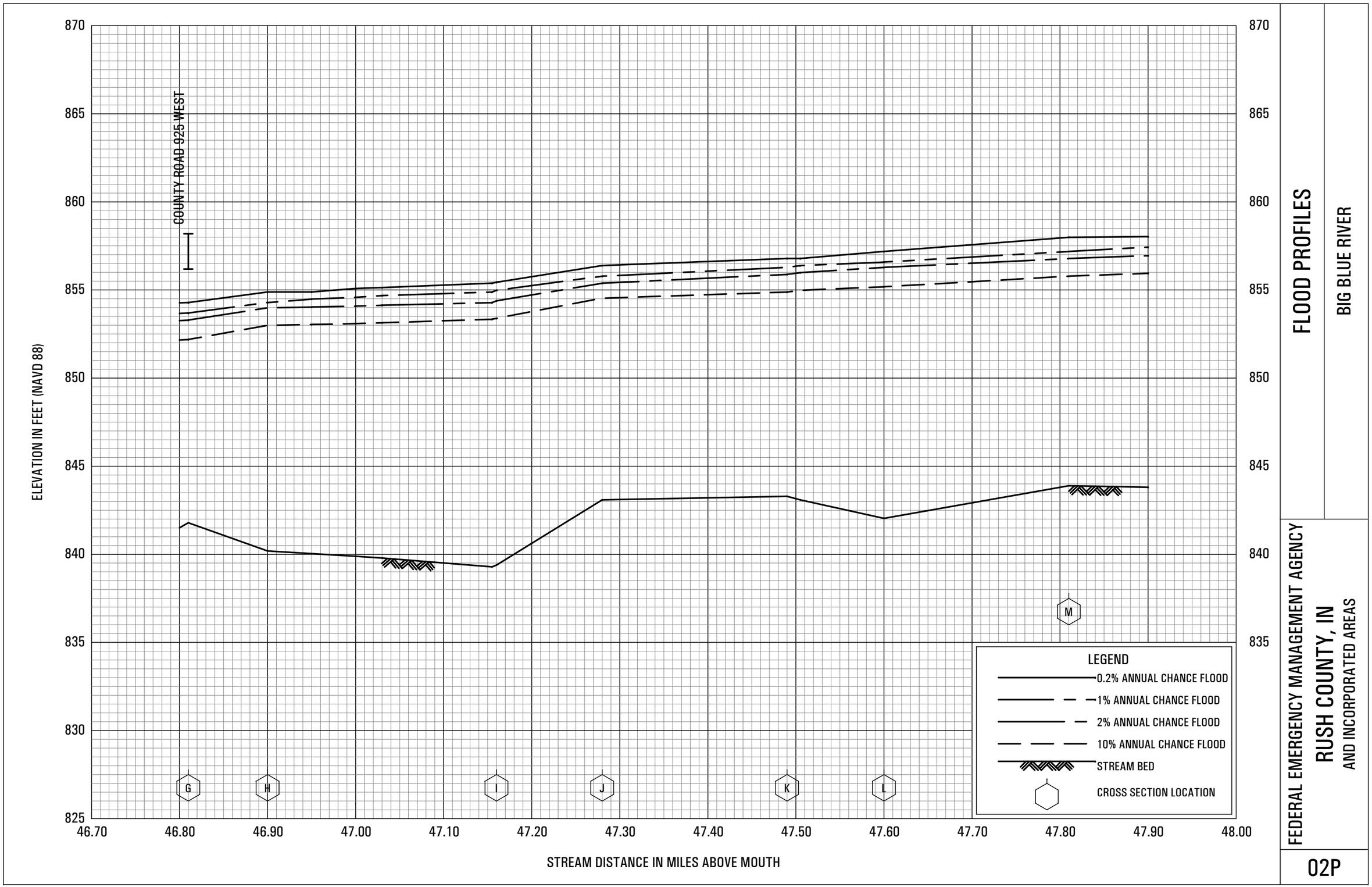
BIG BLUE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

01P



FLOOD PROFILES

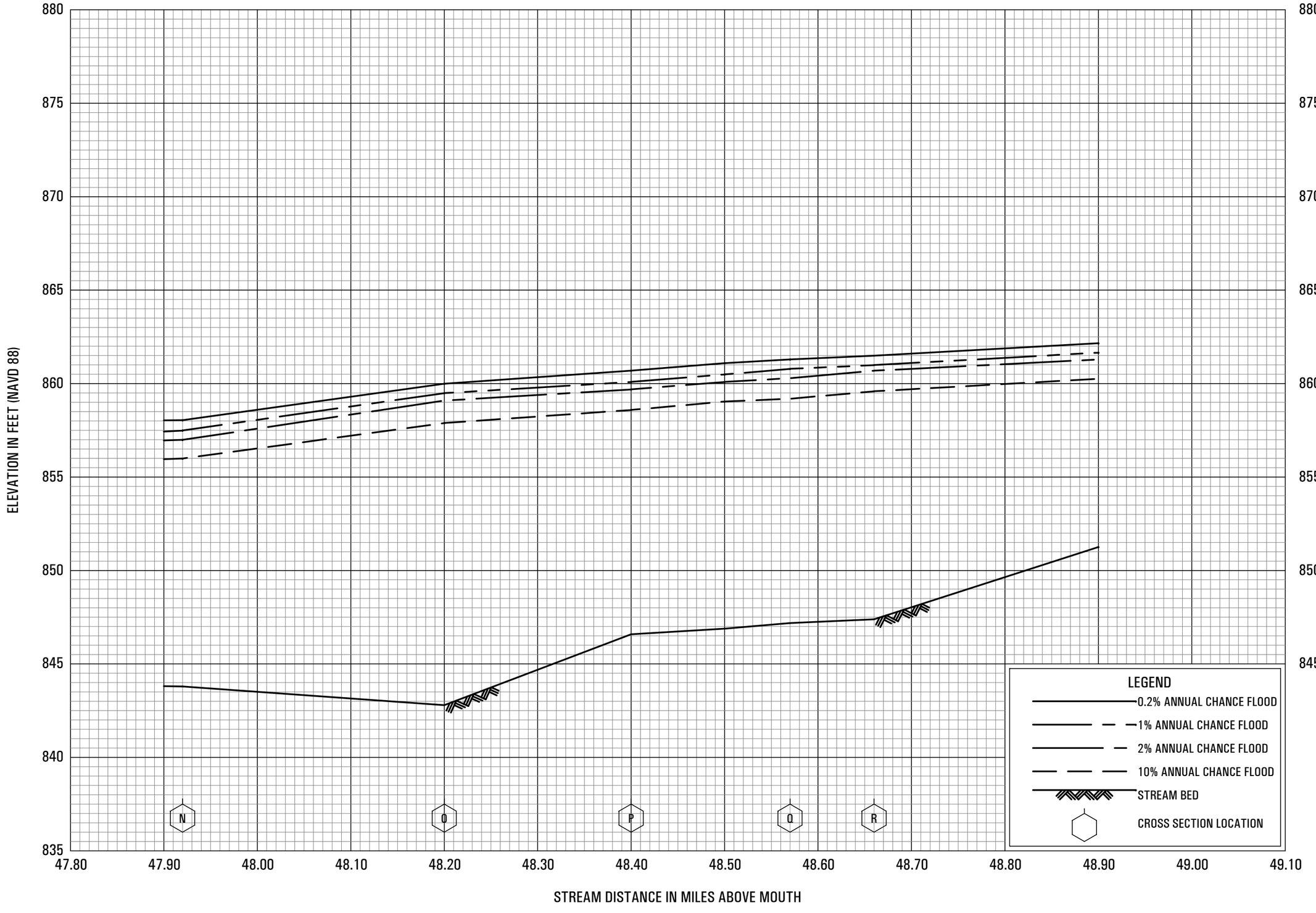
BIG BLUE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

02P



FLOOD PROFILES

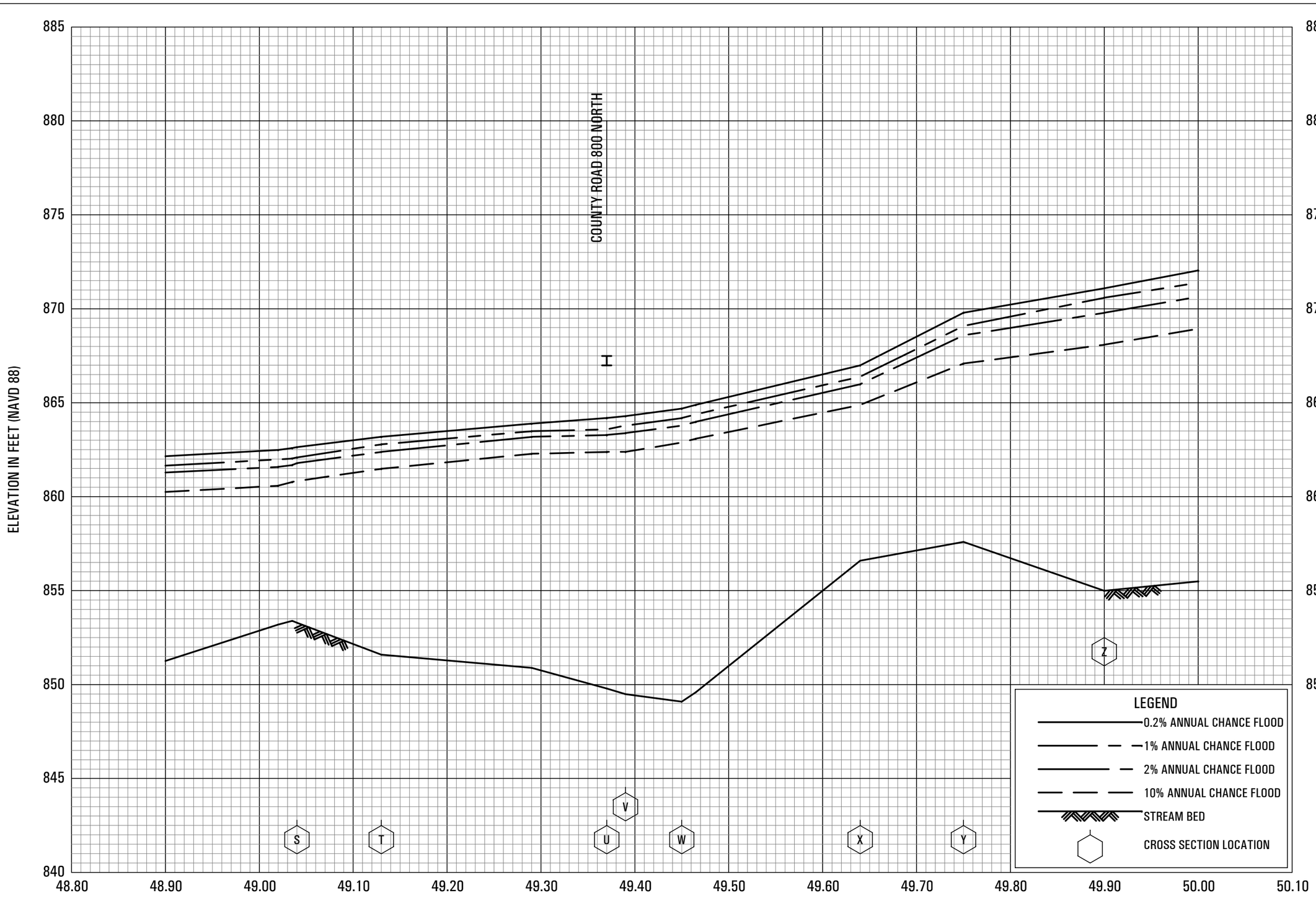
BIG BLUE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

03P



FLOOD PROFILES

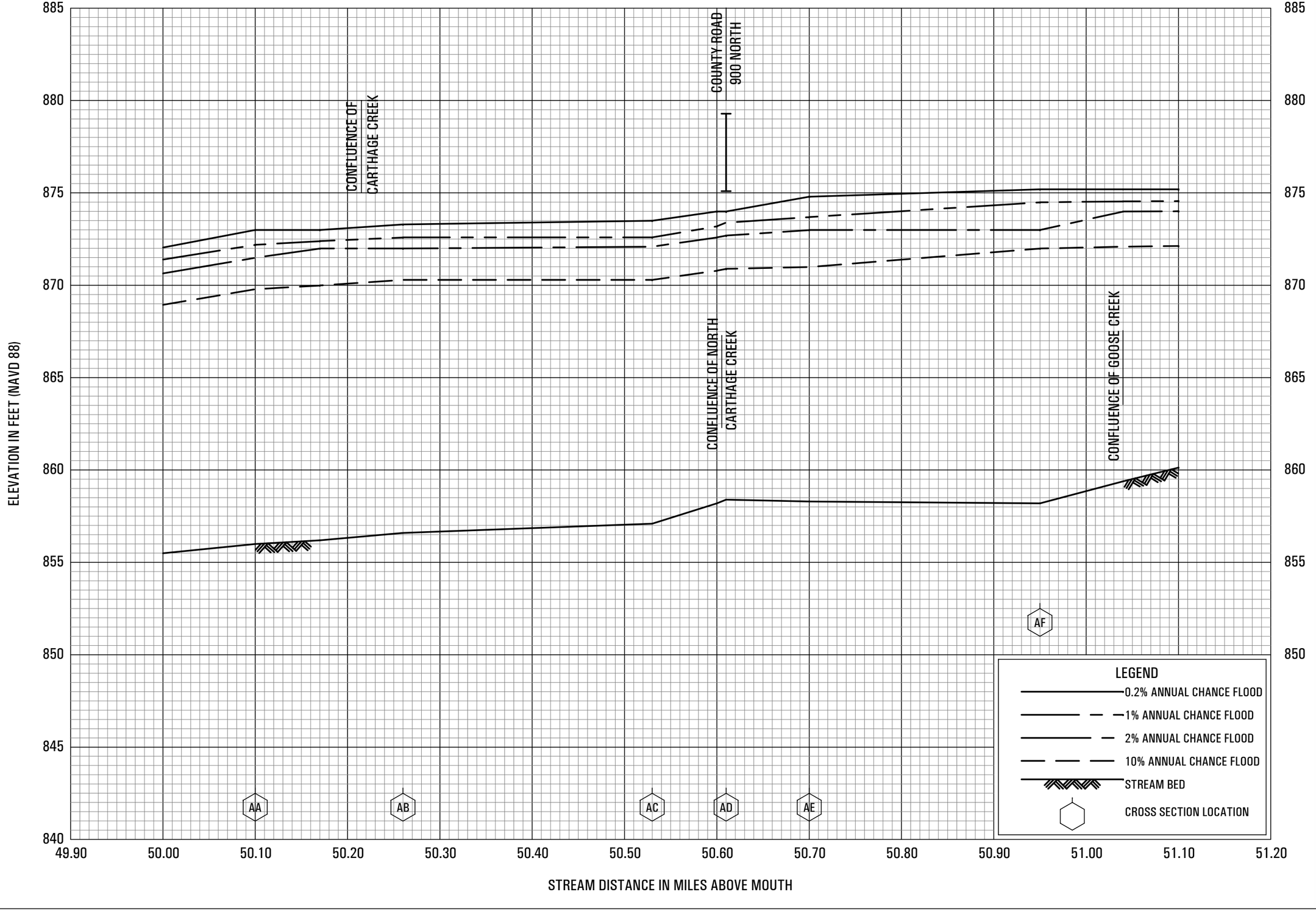
BIG BLUE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

04P



FLOOD PROFILES

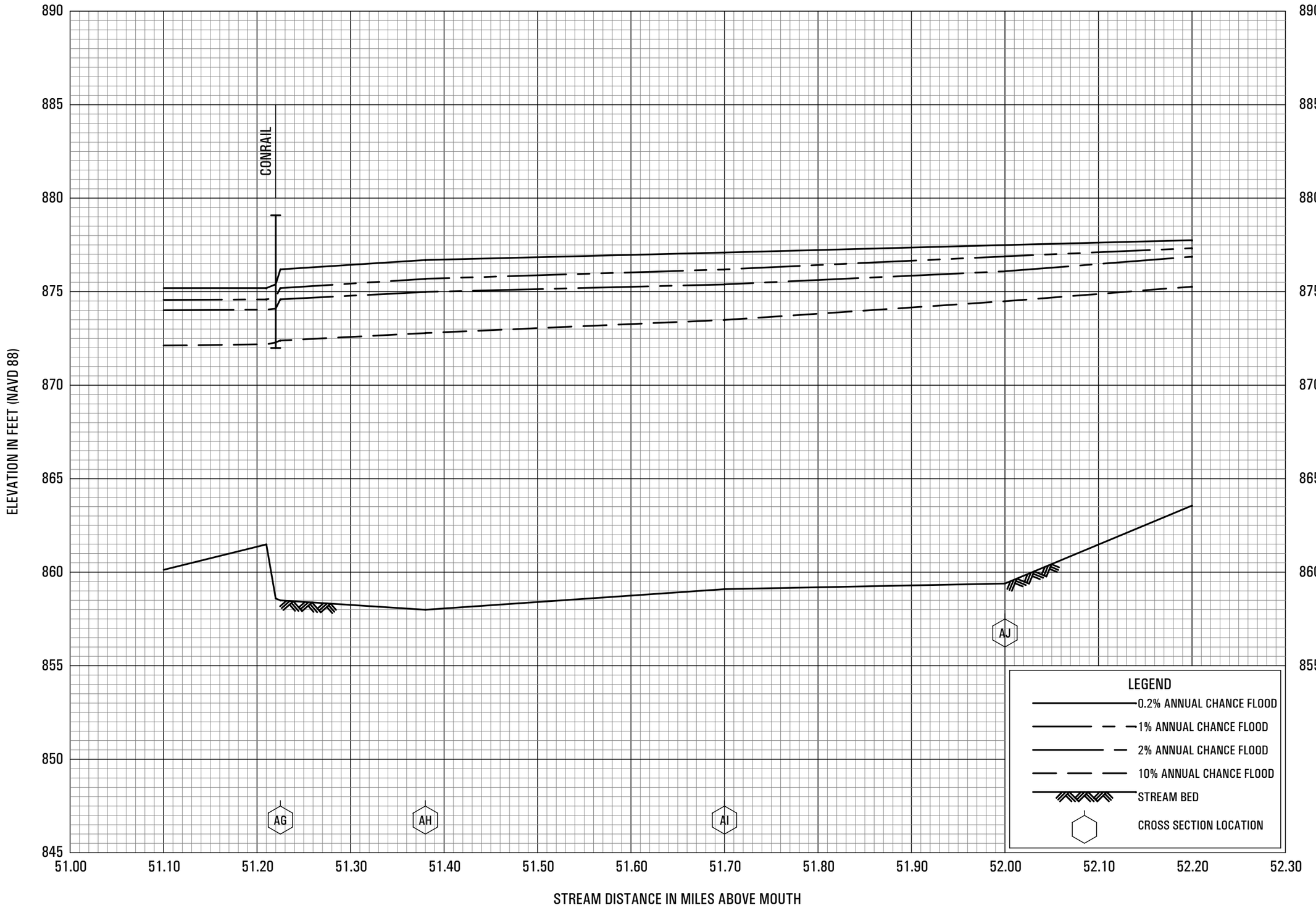
BIG BLUE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

05P



FLOOD PROFILES

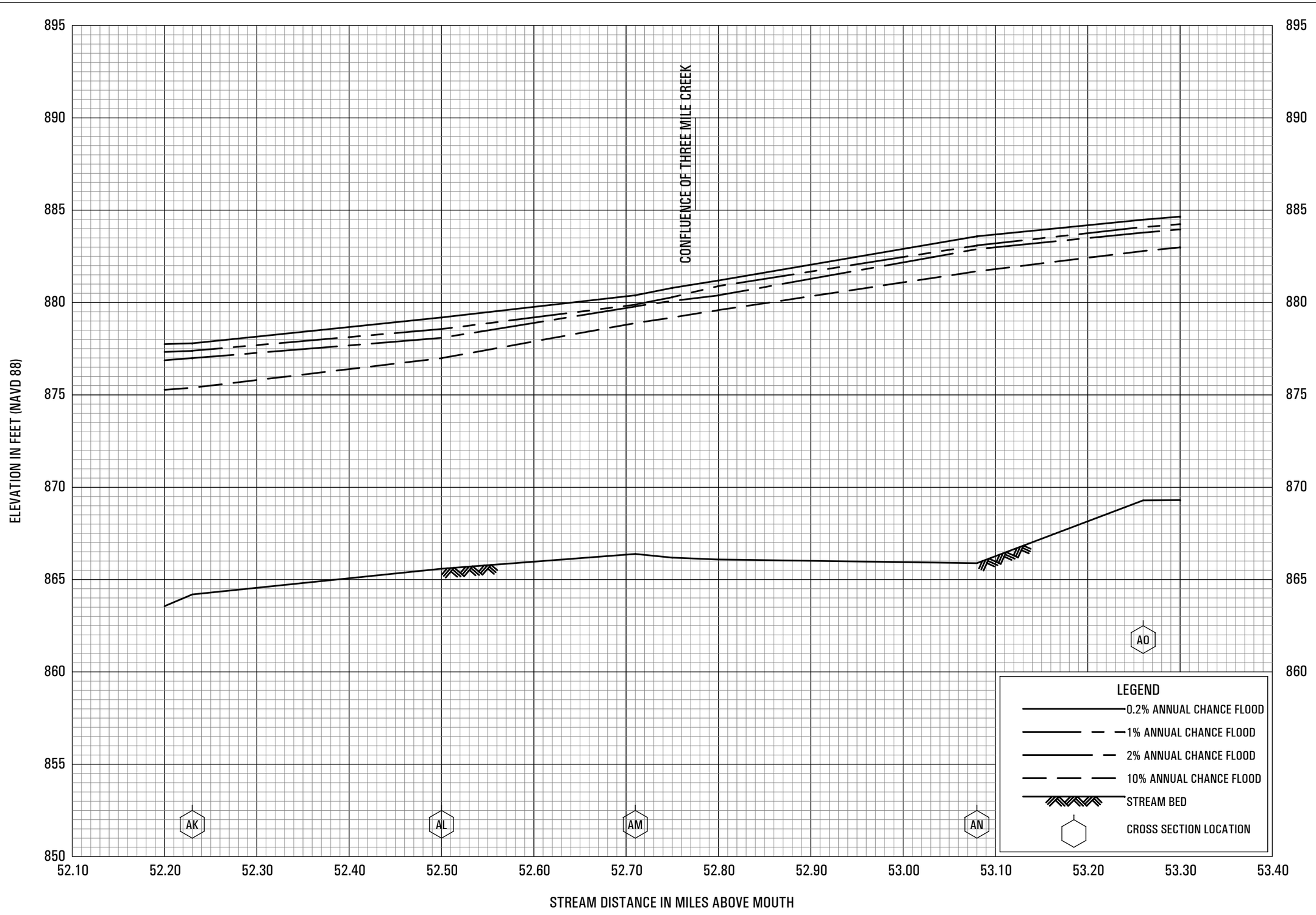
BIG BLUE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

06P



FLOOD PROFILES

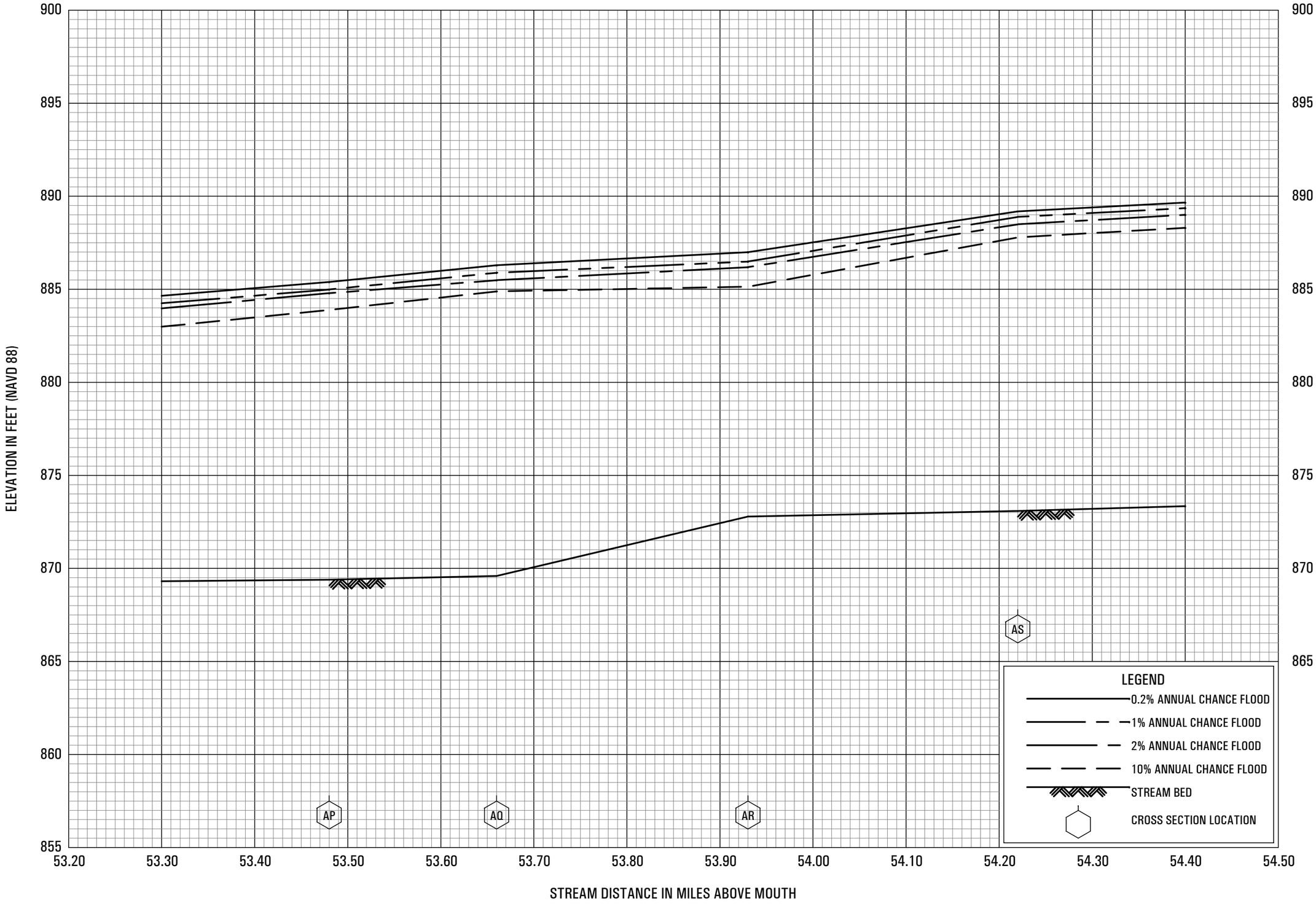
BIG BLUE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

07P



FLOOD PROFILES

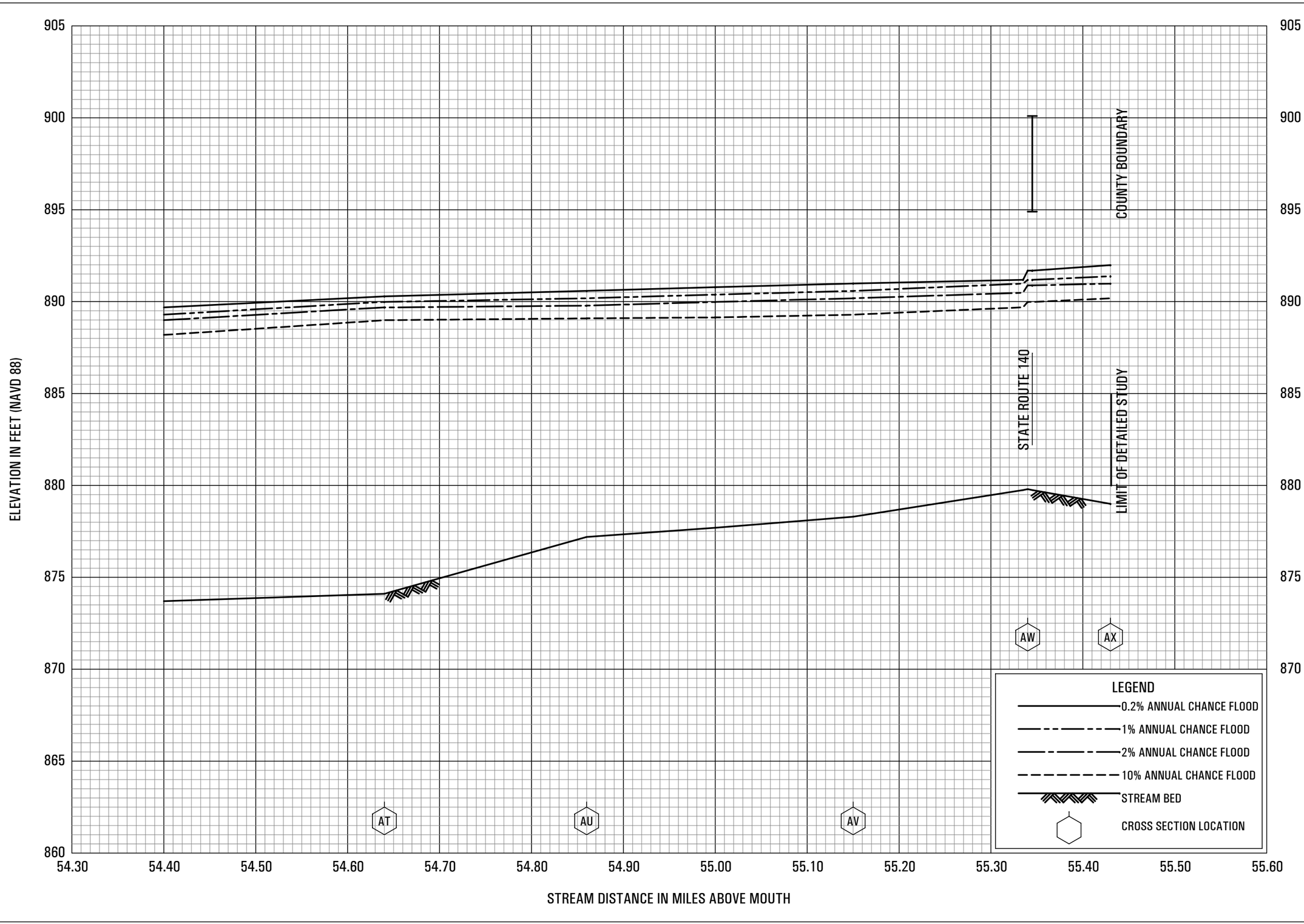
BIG BLUE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

08P



FLOOD PROFILES

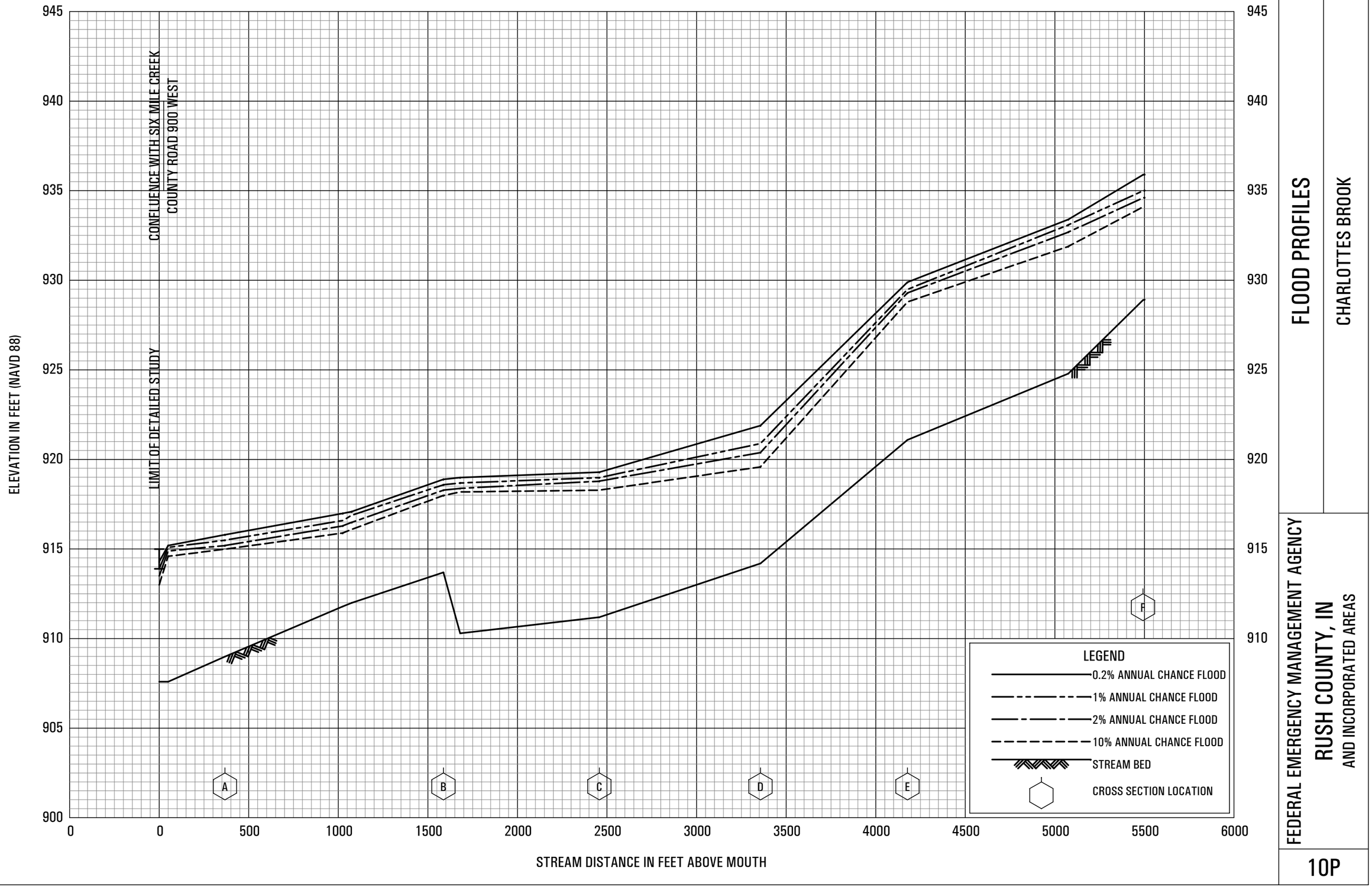
BIG BLUE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

09P



FLOOD PROFILES

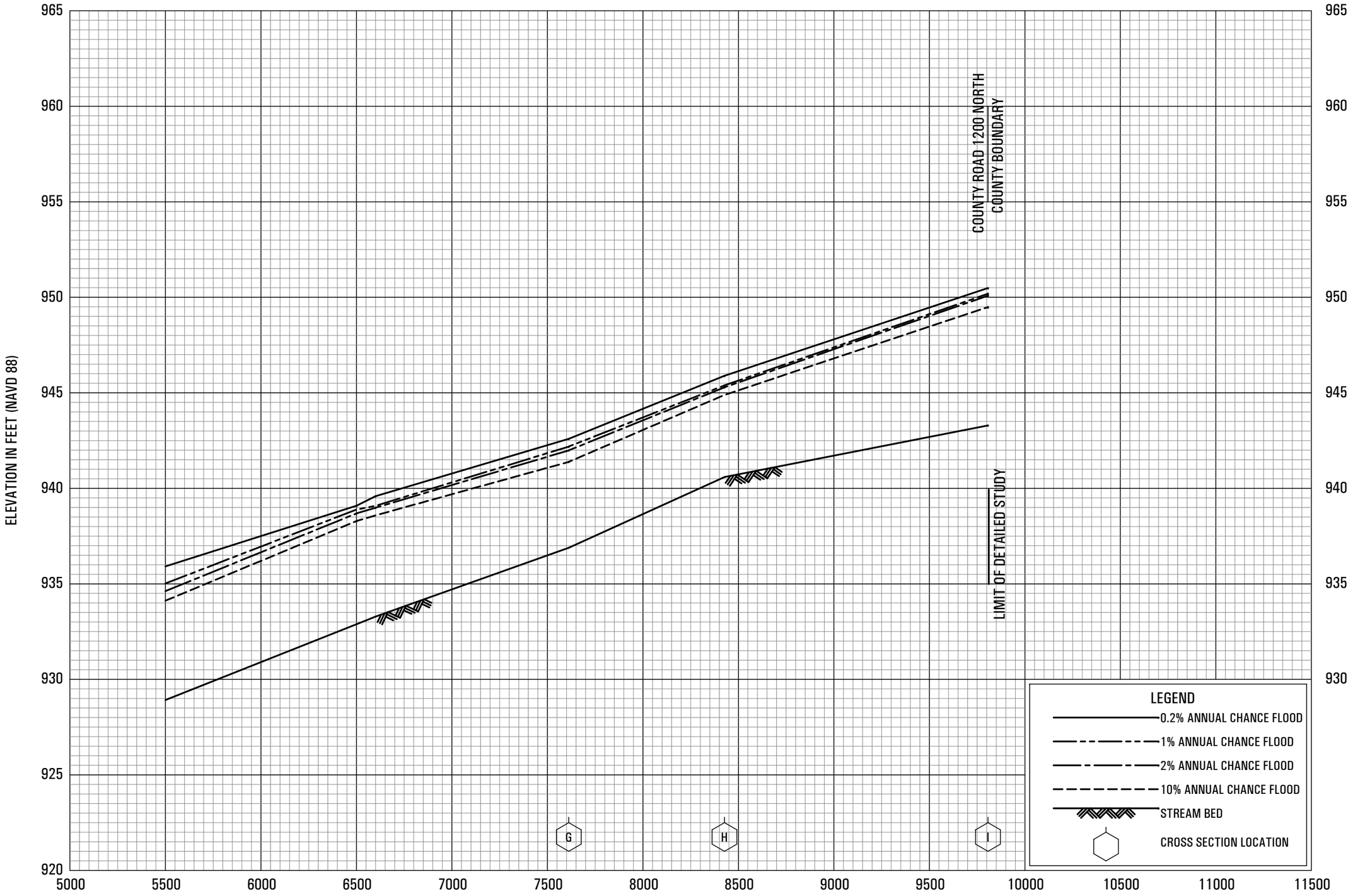
CHARLOTTES BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

10P



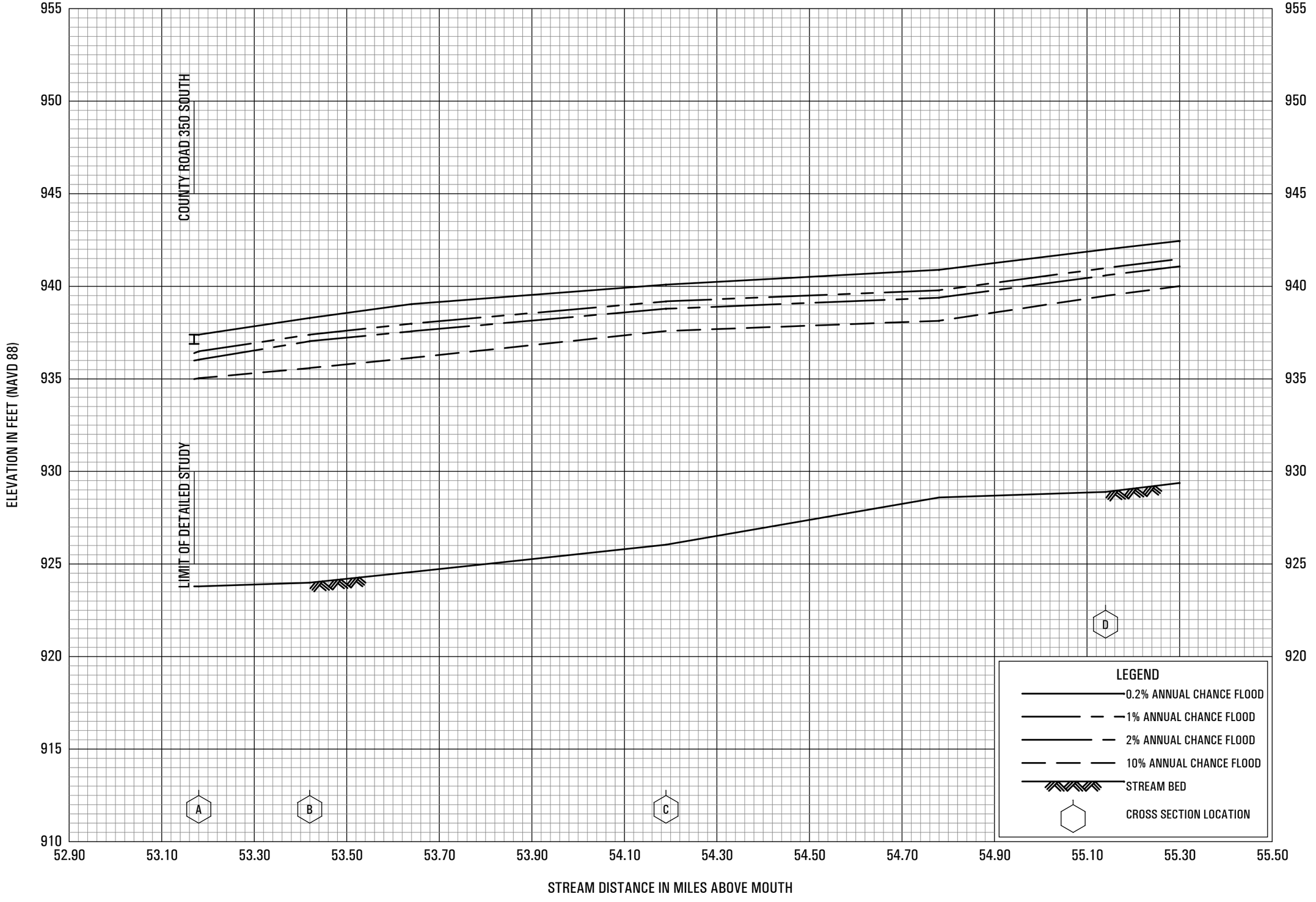
FLOOD PROFILES

CHARLOTTES BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

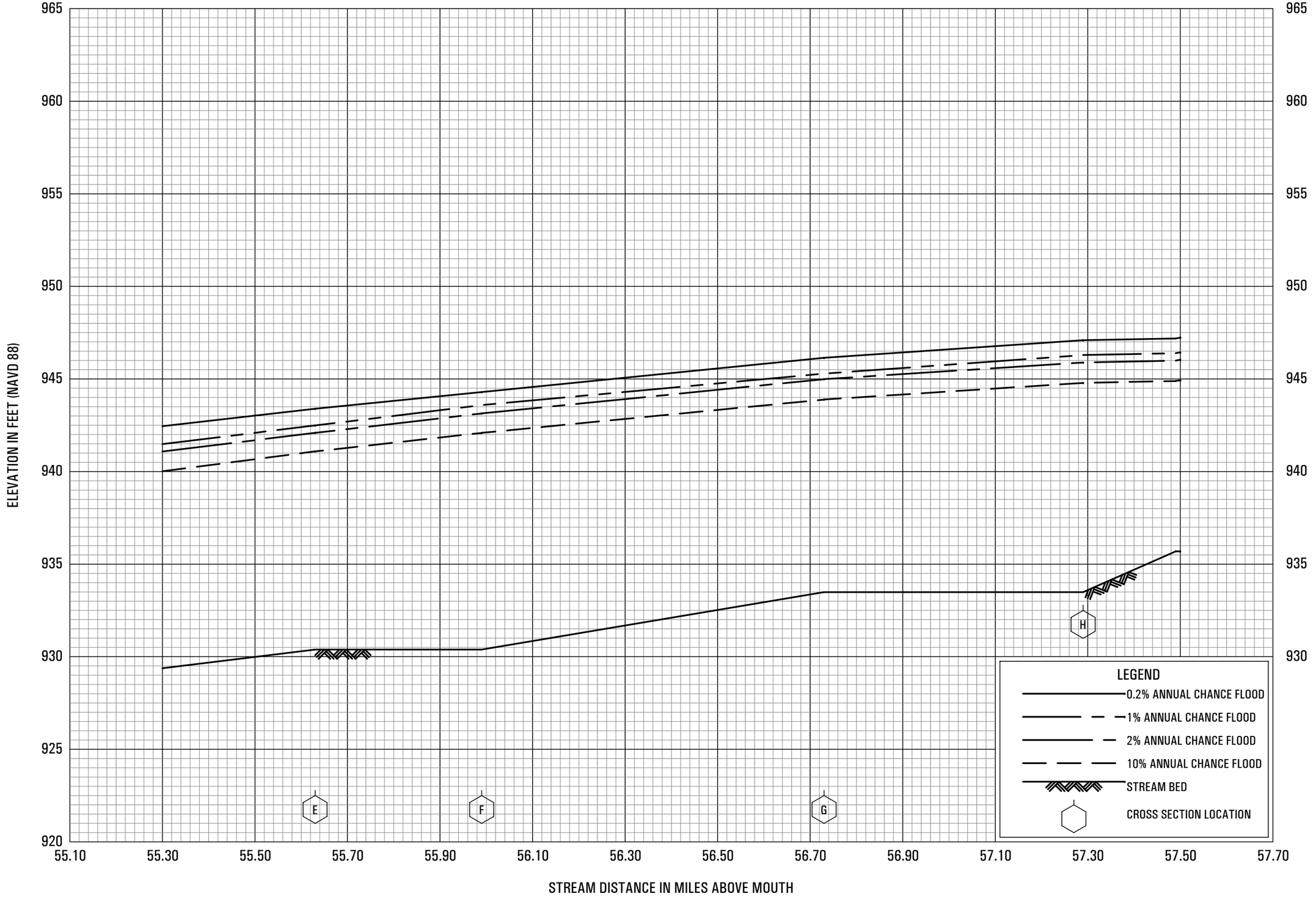
FLATROCK RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

12P



FLOOD PROFILES

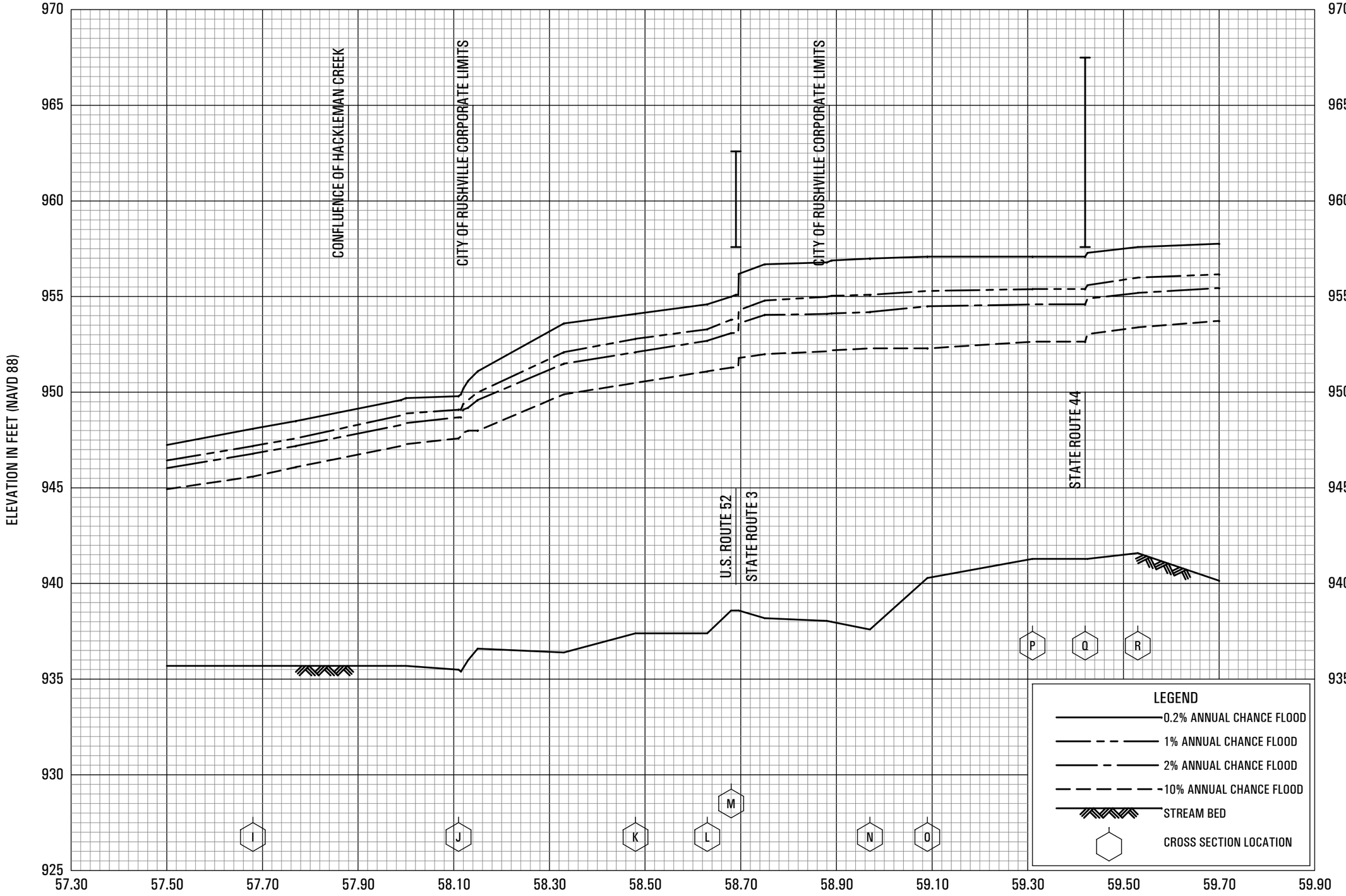
FLATROCK RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

13P



FLOOD PROFILES

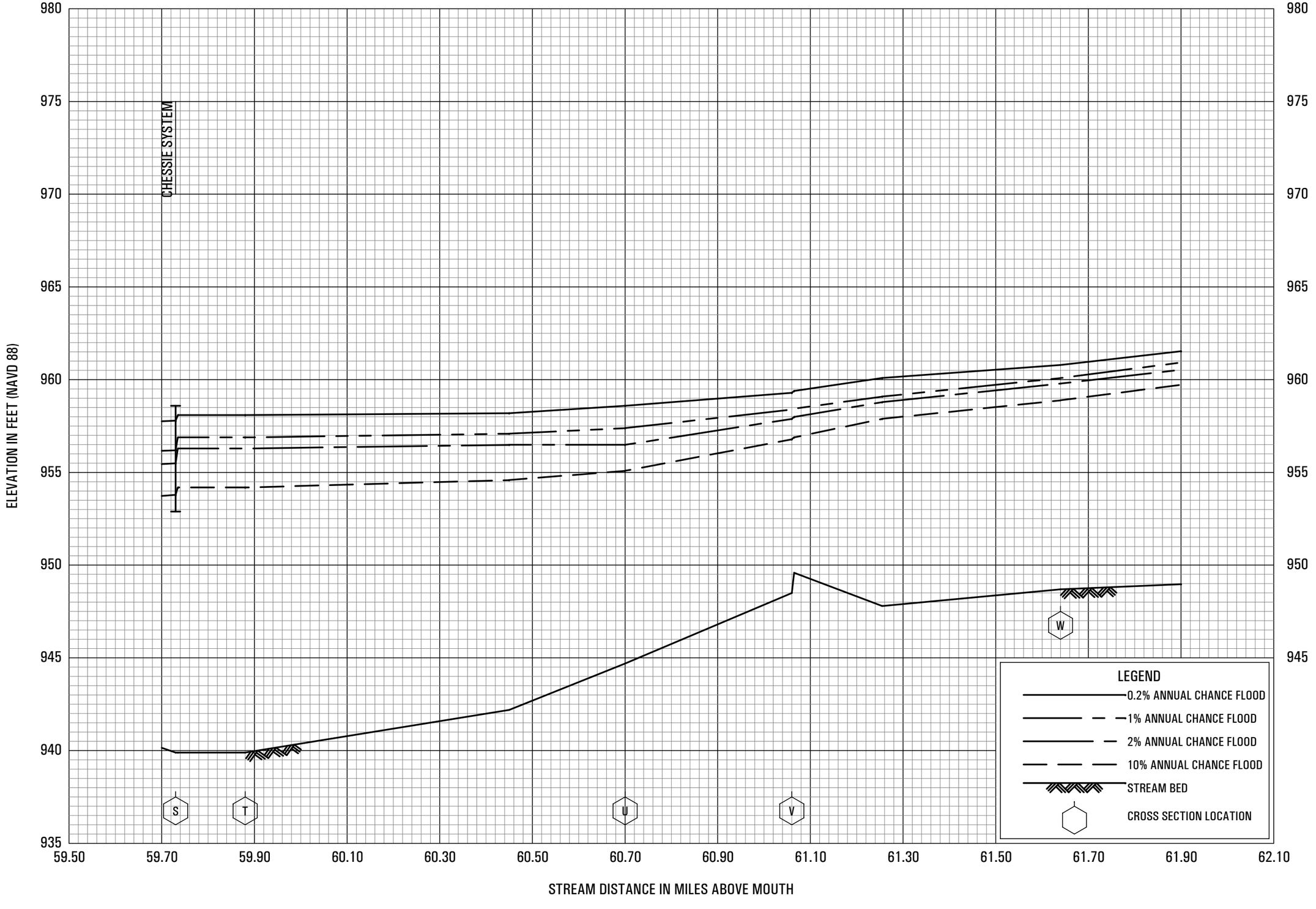
FLATROCK RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

14P



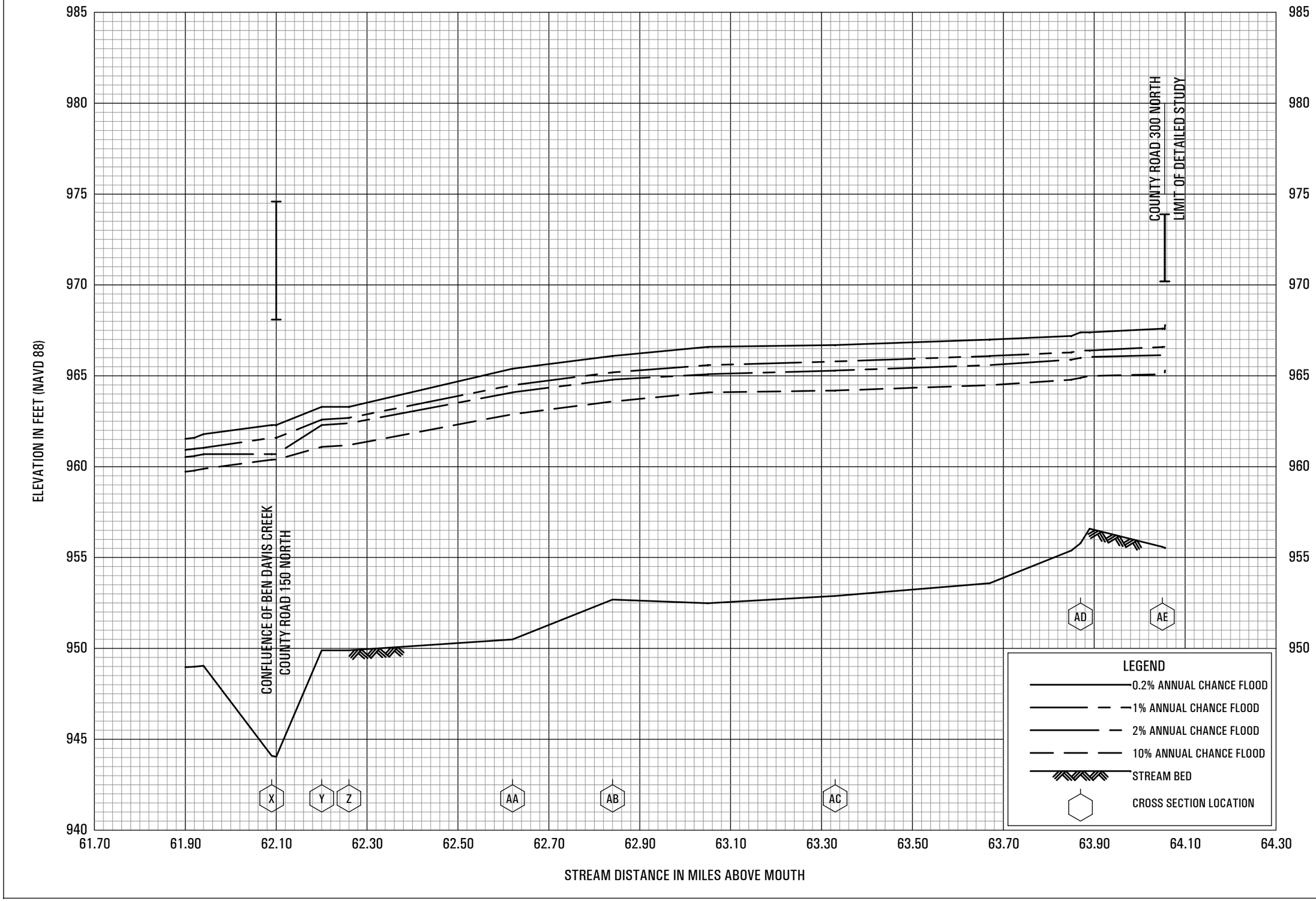
FLOOD PROFILES

FLATROCK RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

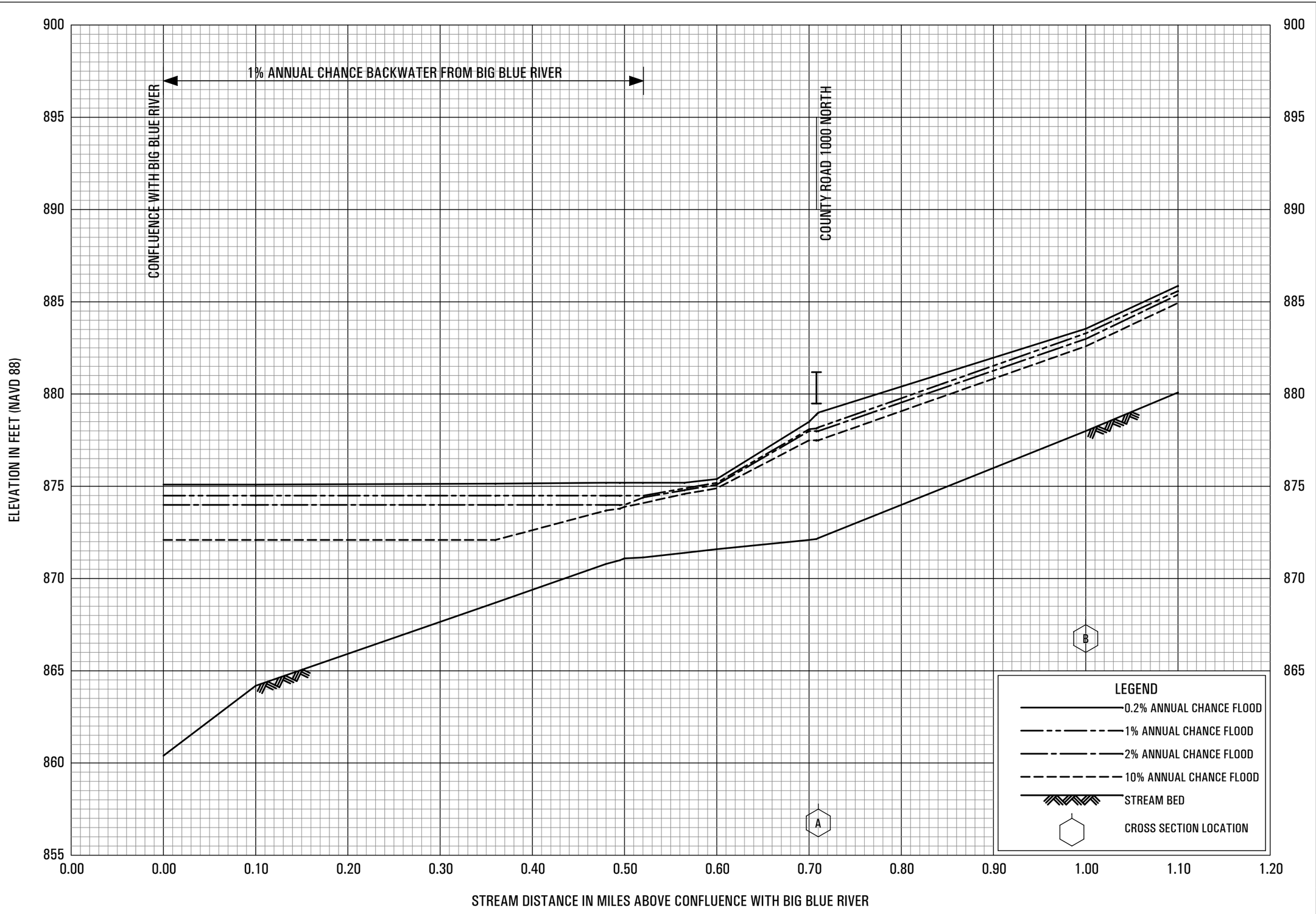
FLATROCK RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

16P



FLOOD PROFILES

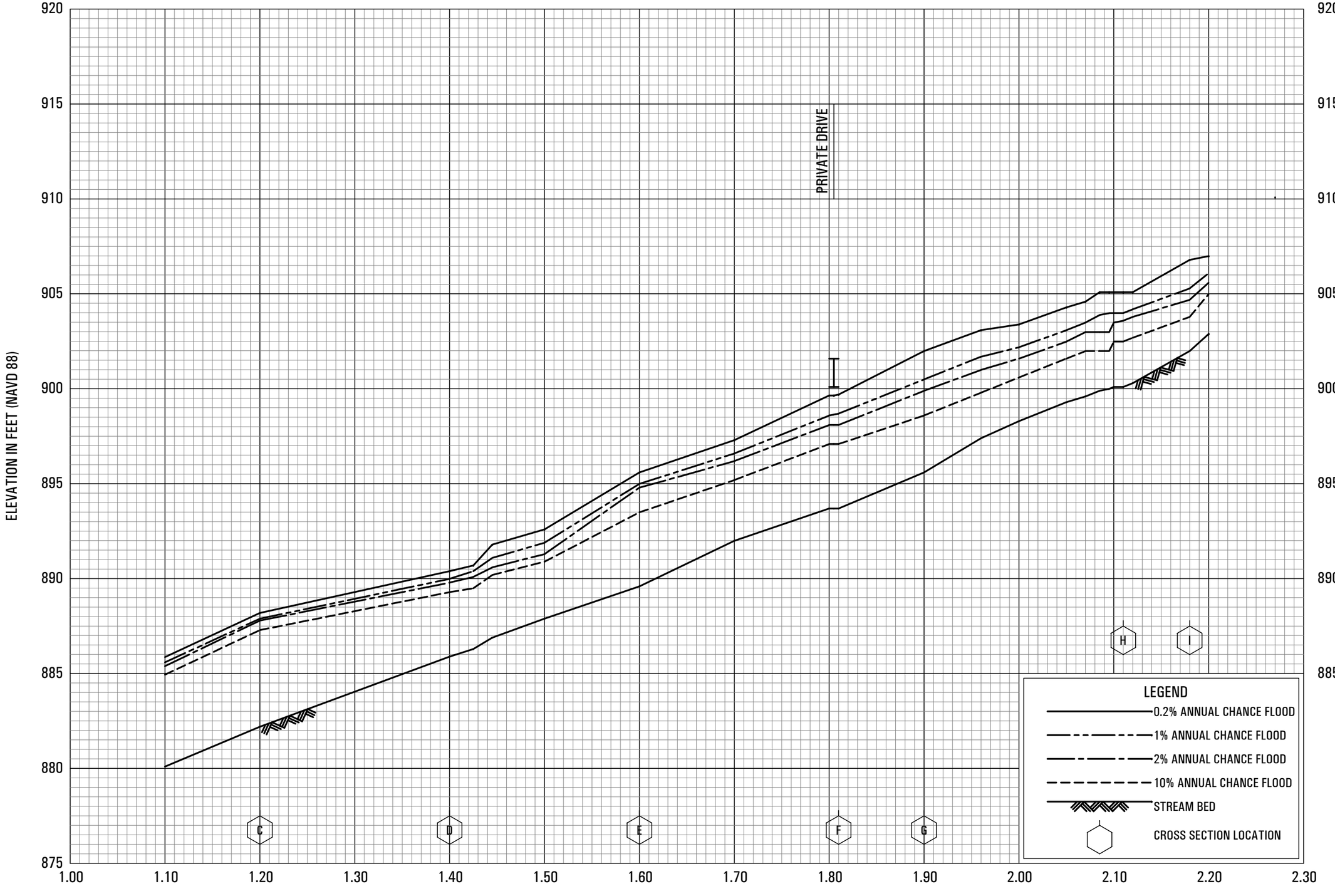
GOOSE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

17P



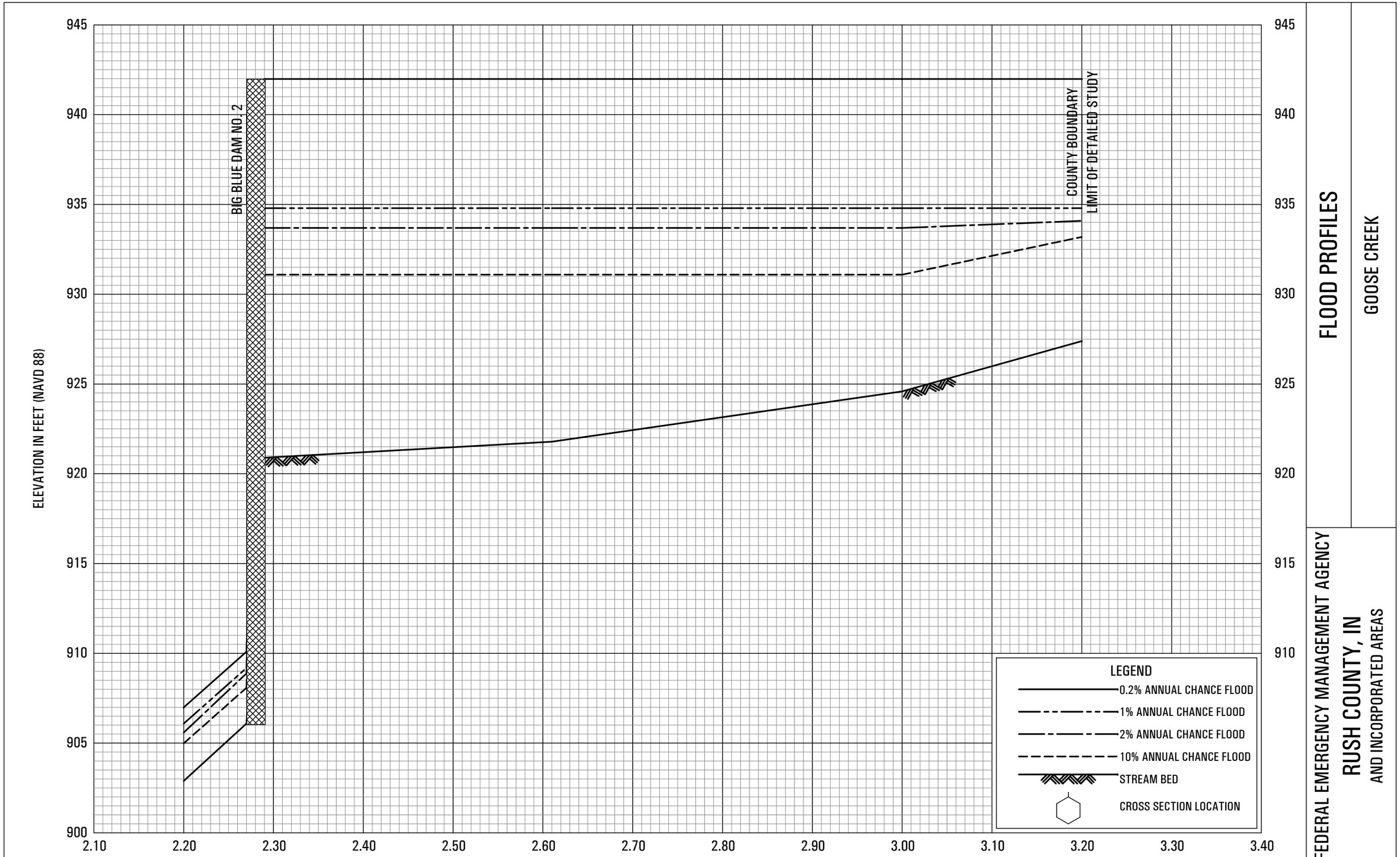
FLOOD PROFILES

GOOSE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

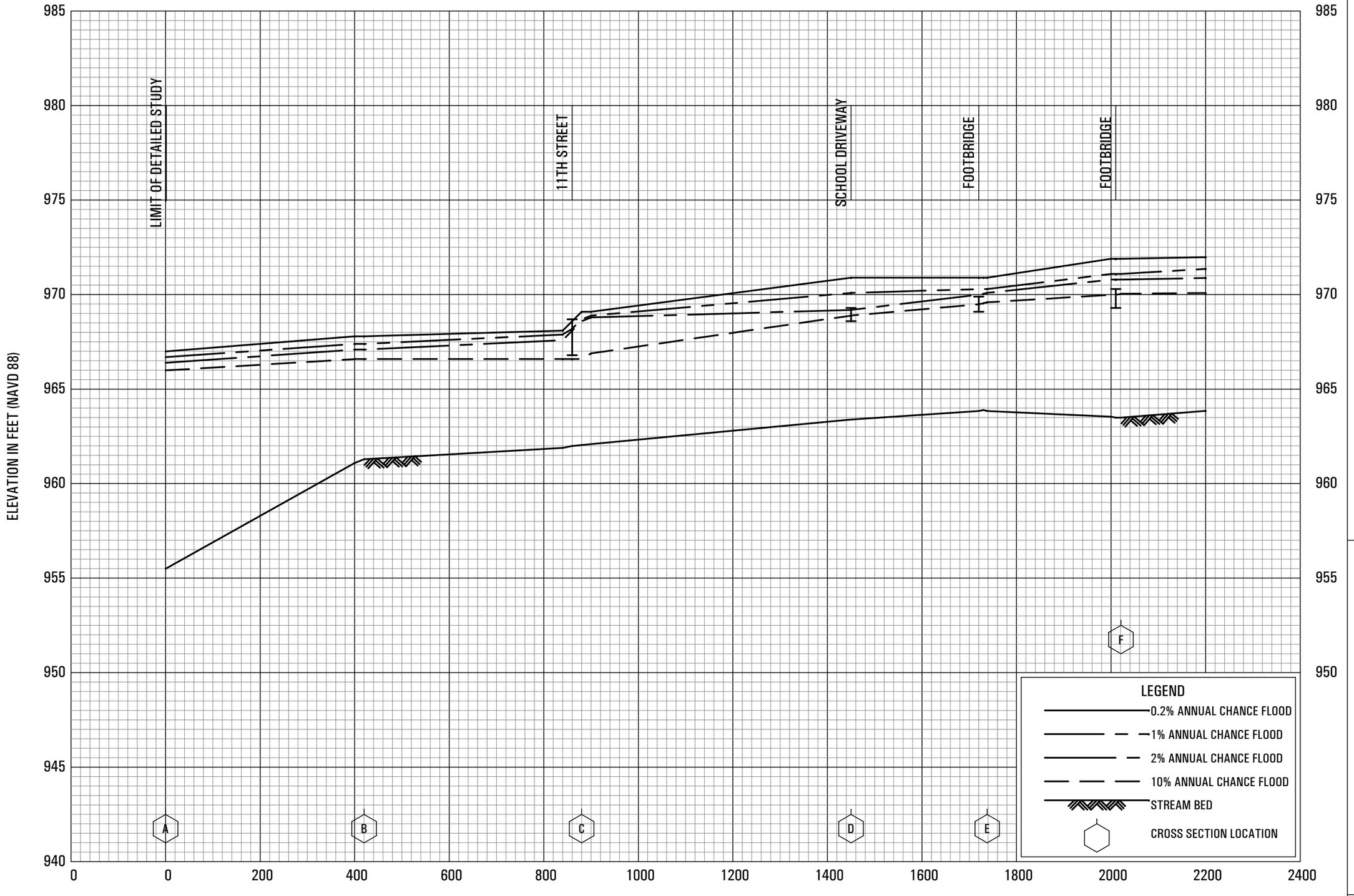
GOOSE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

19P



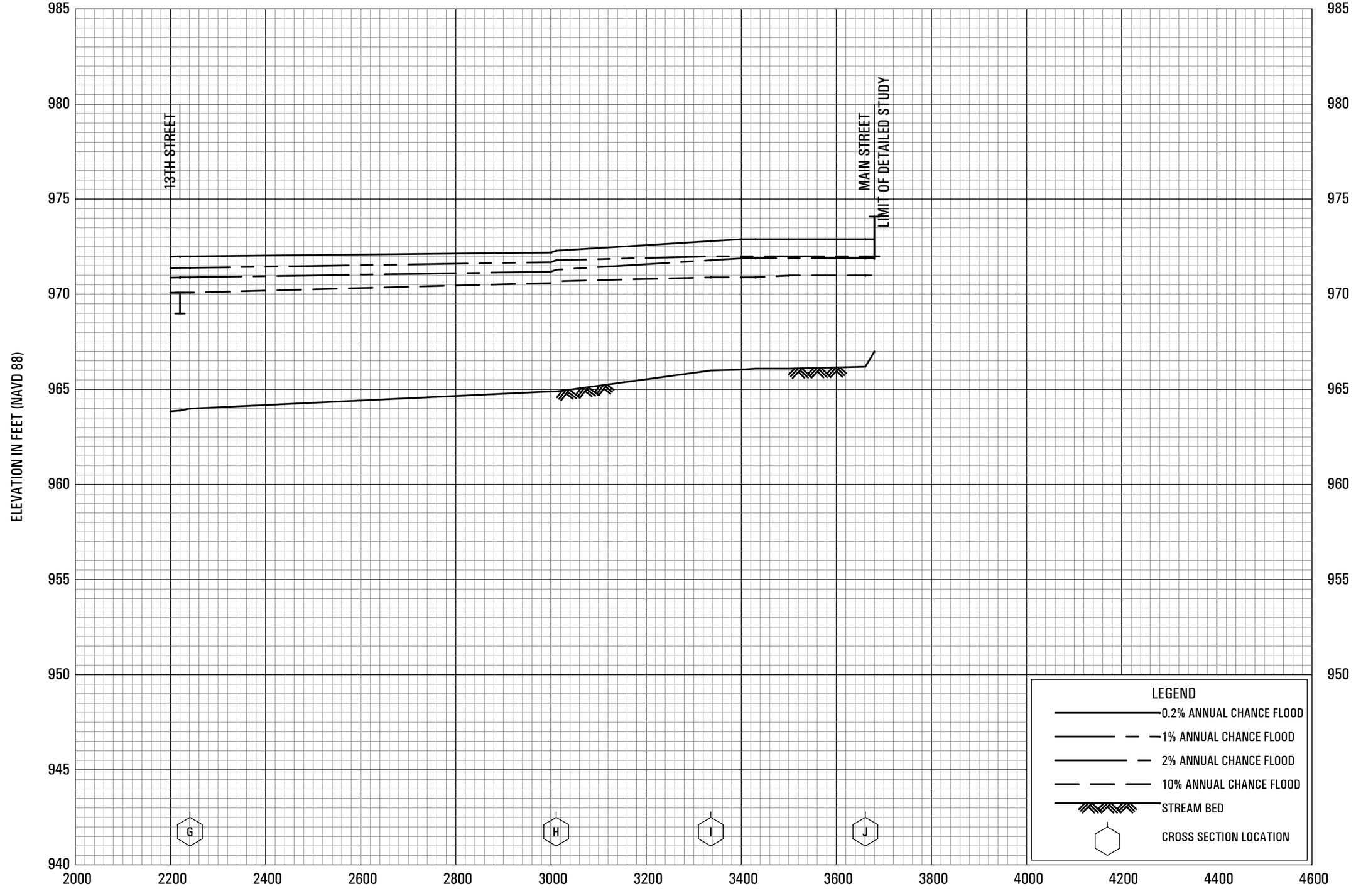
FLOOD PROFILES

HODGES BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCOPORATED AREAS



FLOOD PROFILES

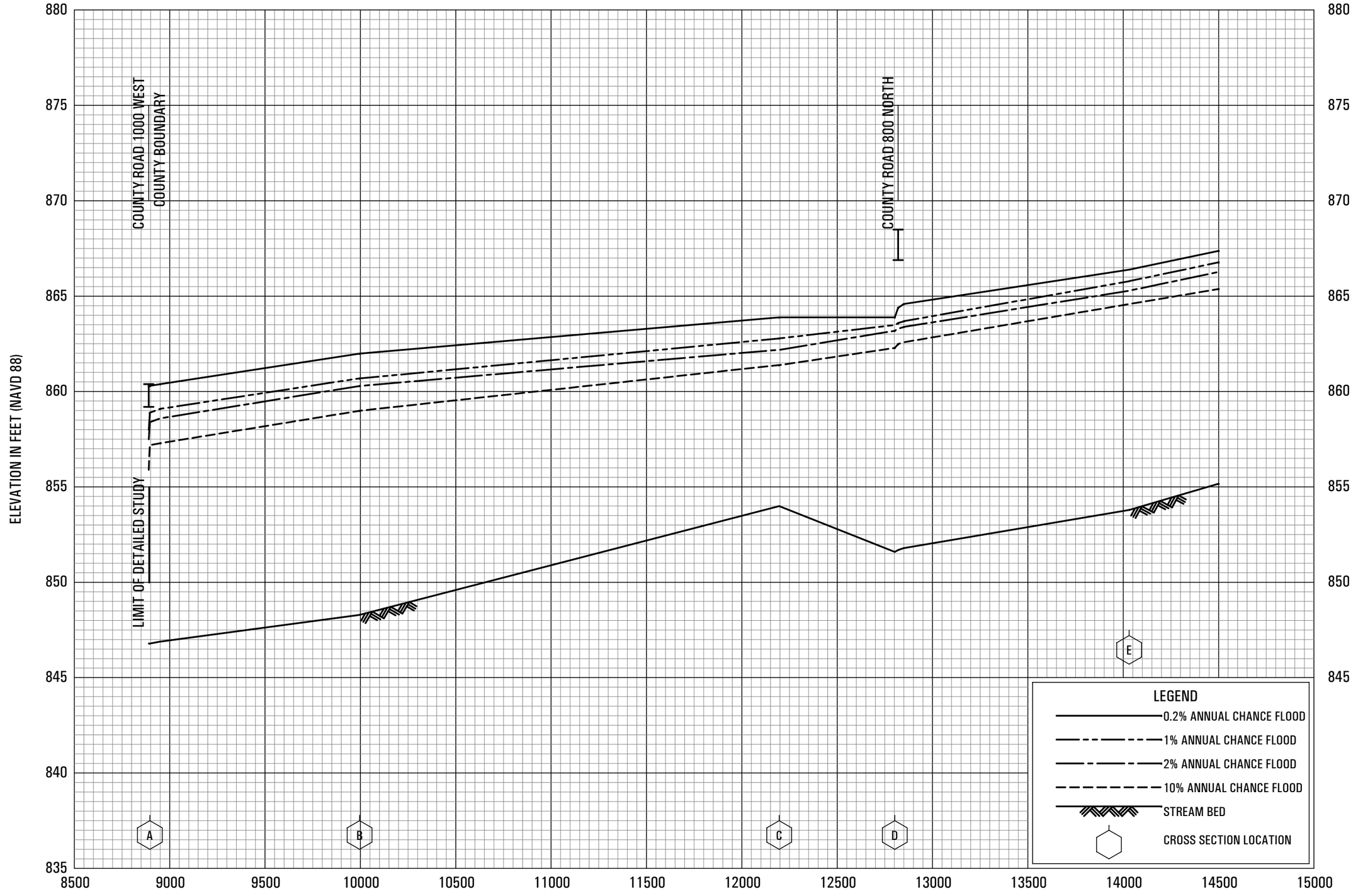
HODGES BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCOPORATED AREAS

21P



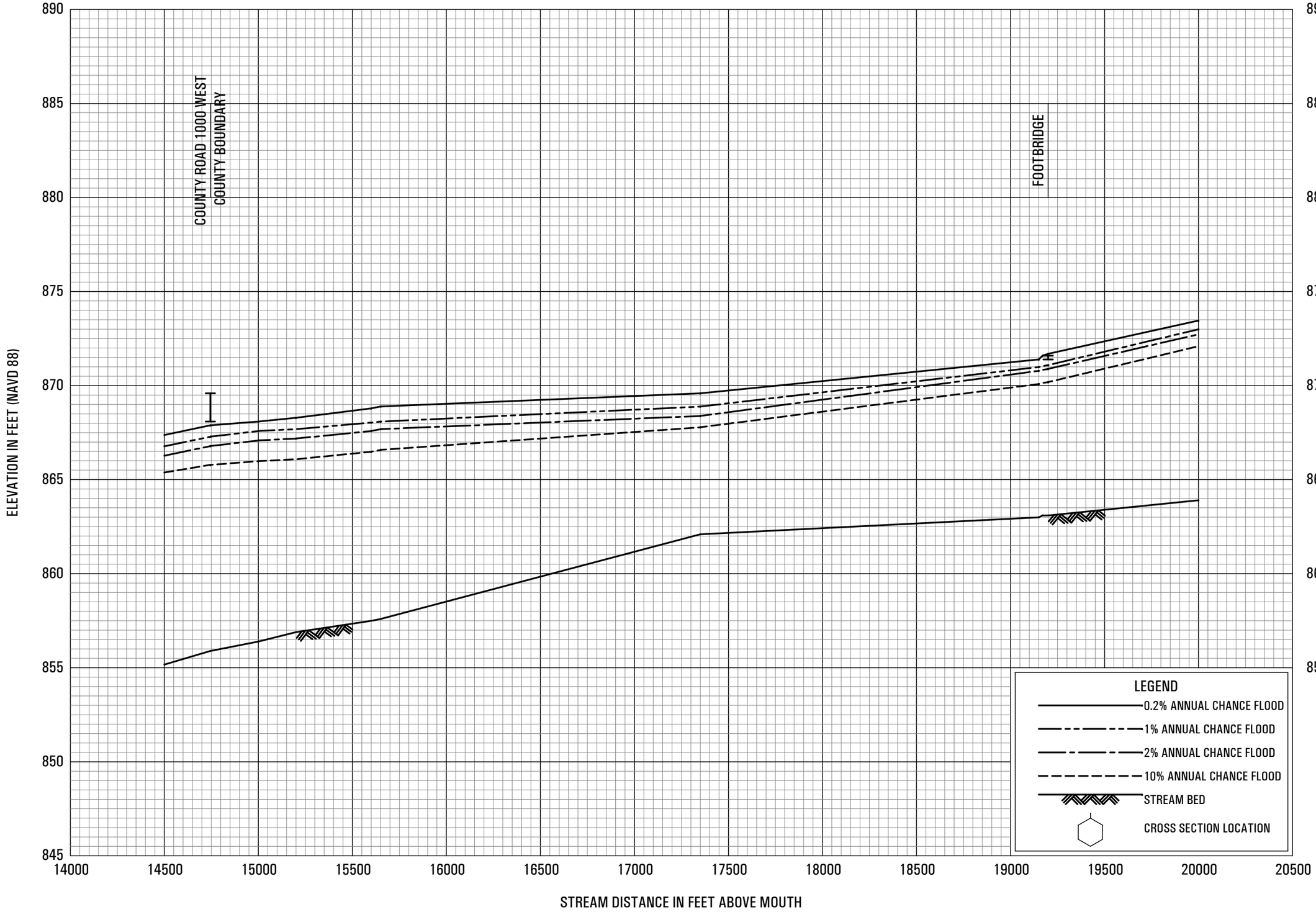
FLOOD PROFILES

SIX MILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

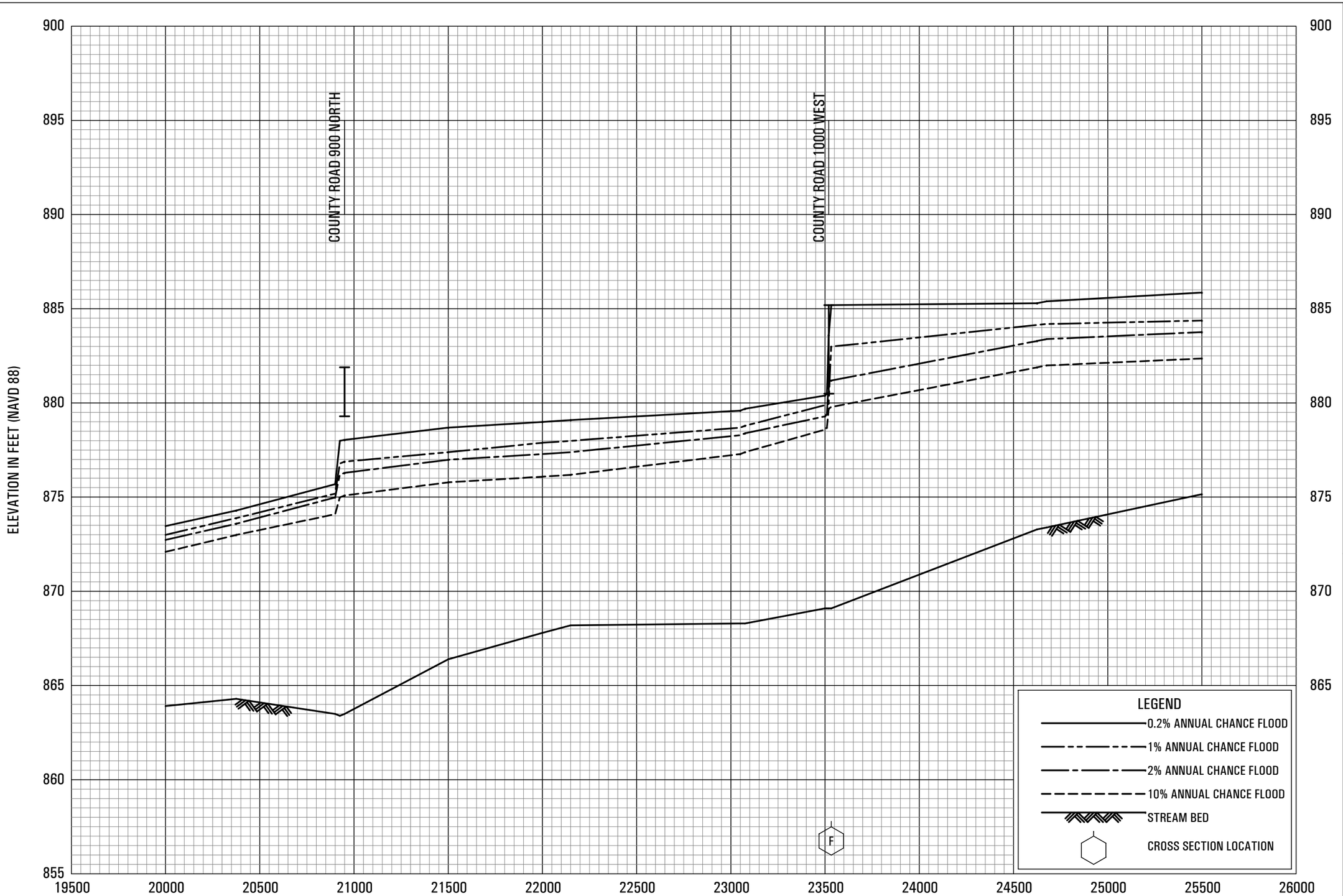
SIX MILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

23P



FLOOD PROFILES

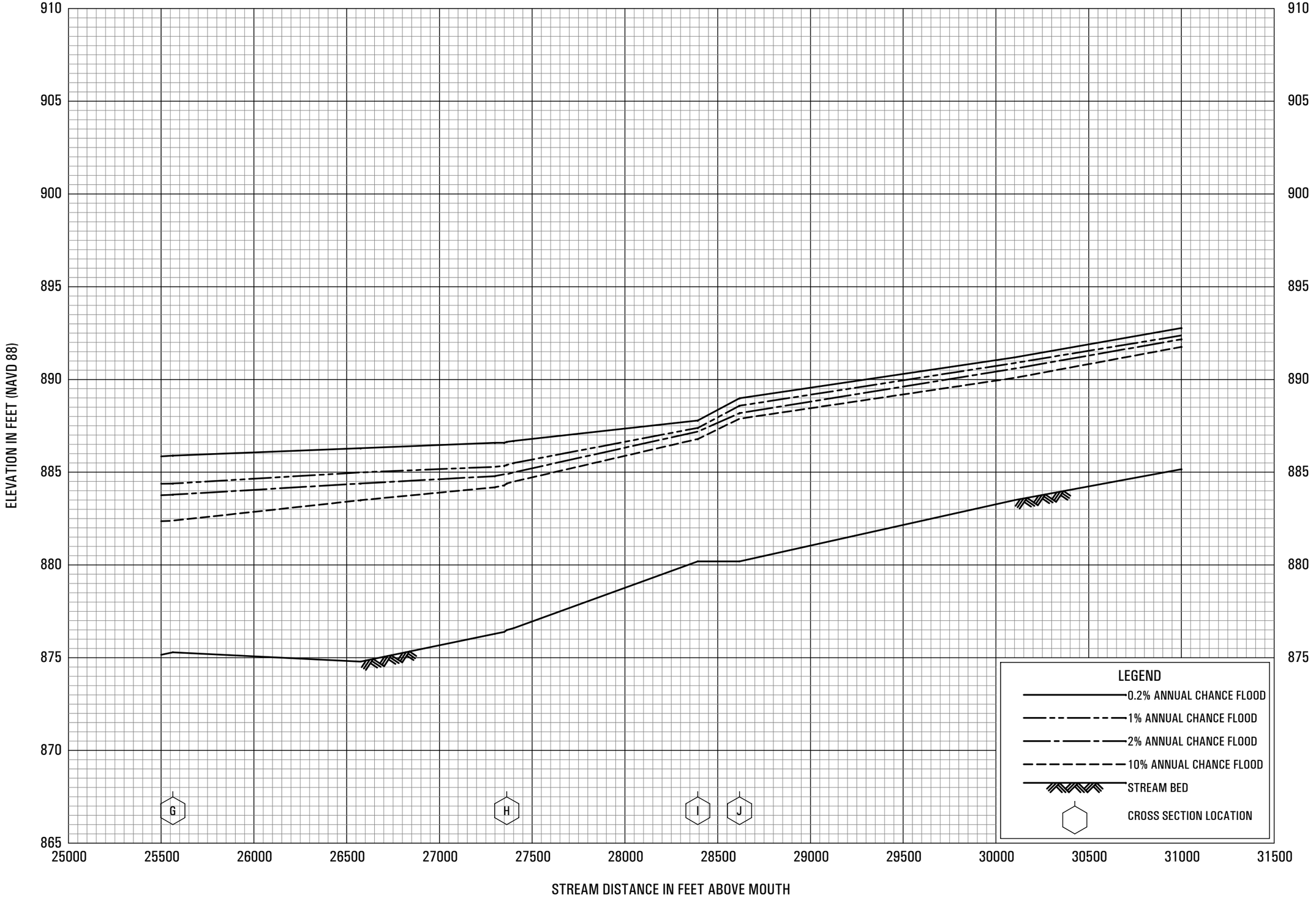
SIX MILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

24P



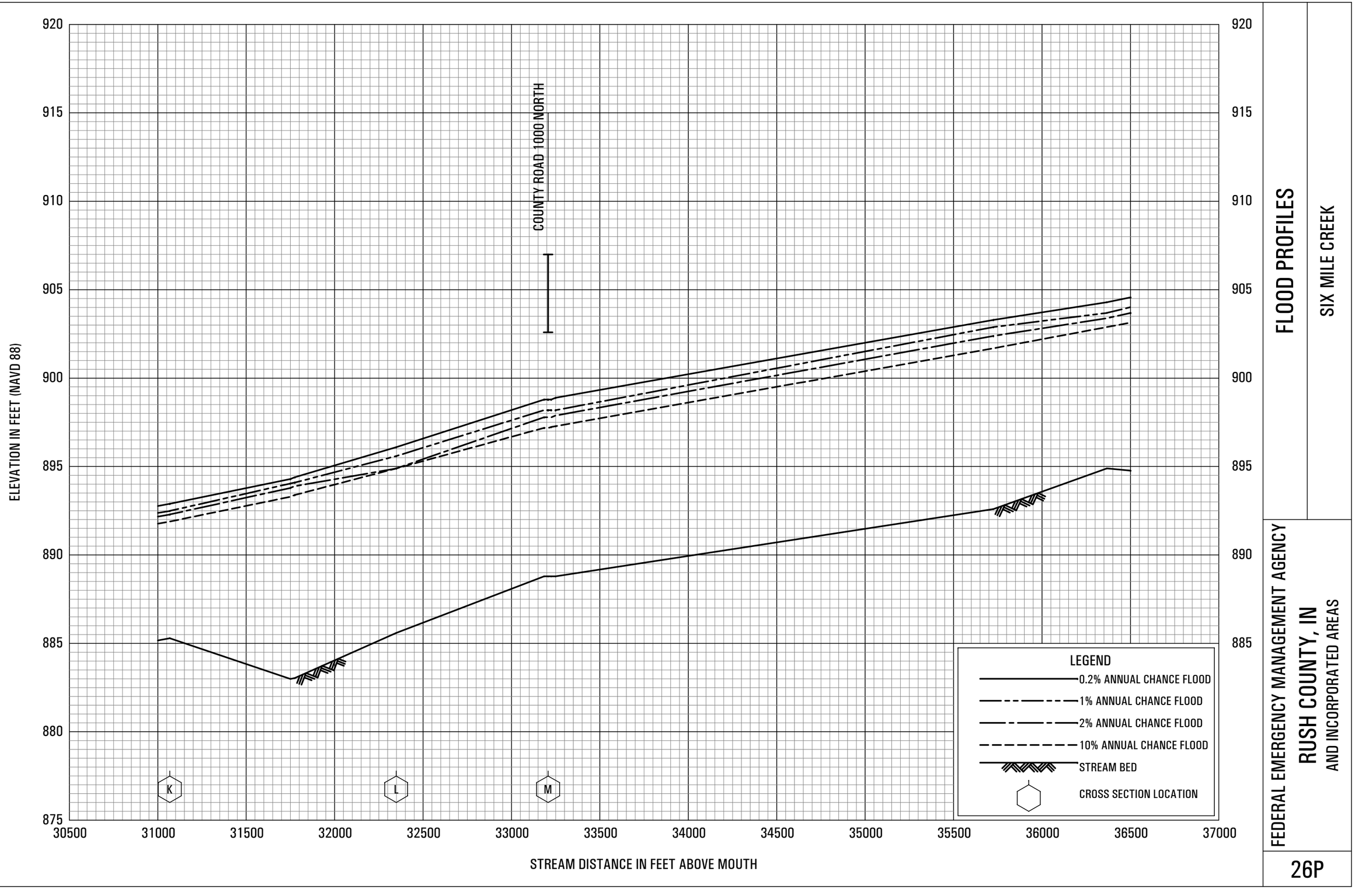
FLOOD PROFILES

SIX MILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

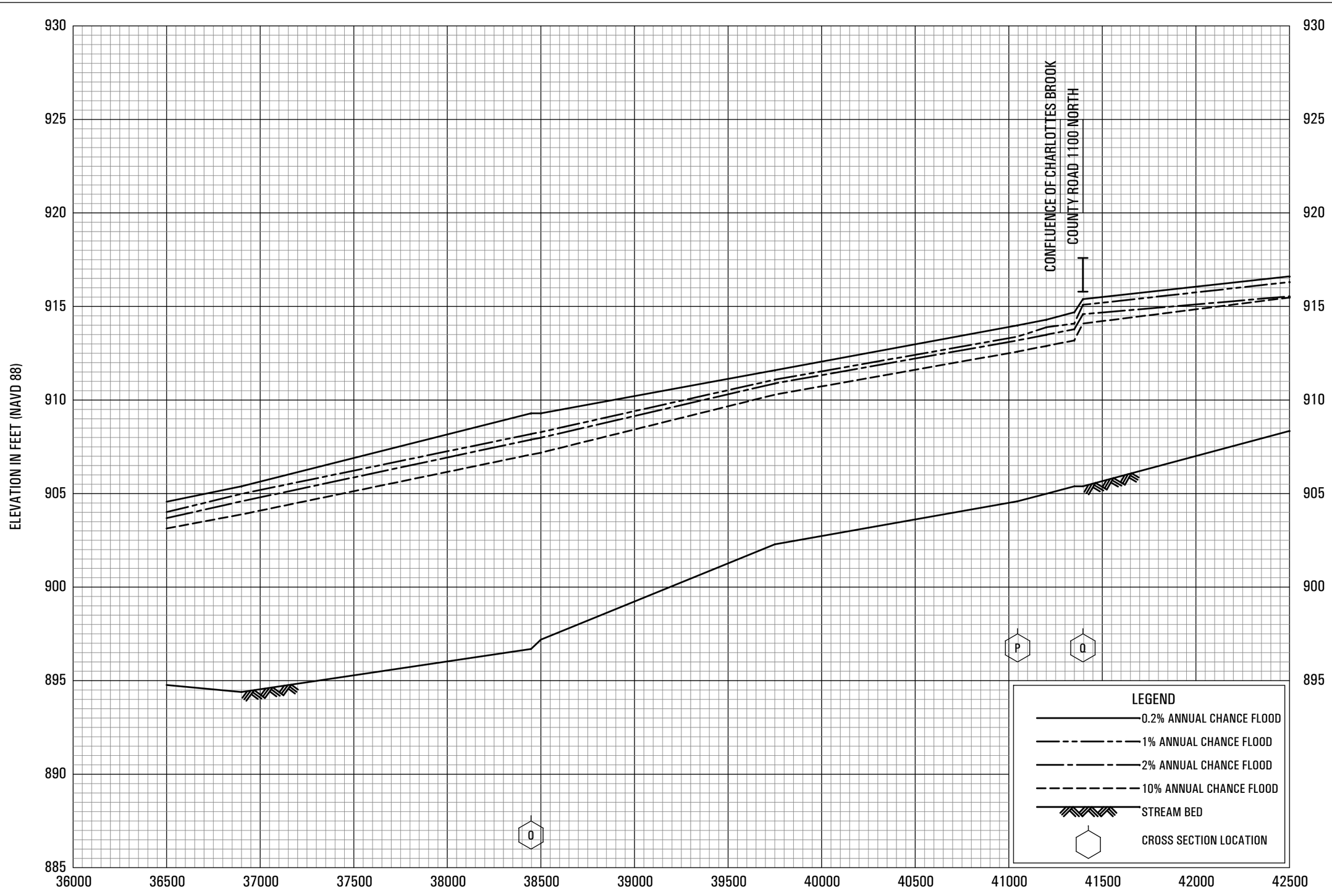
SIX MILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

26P



FLOOD PROFILES

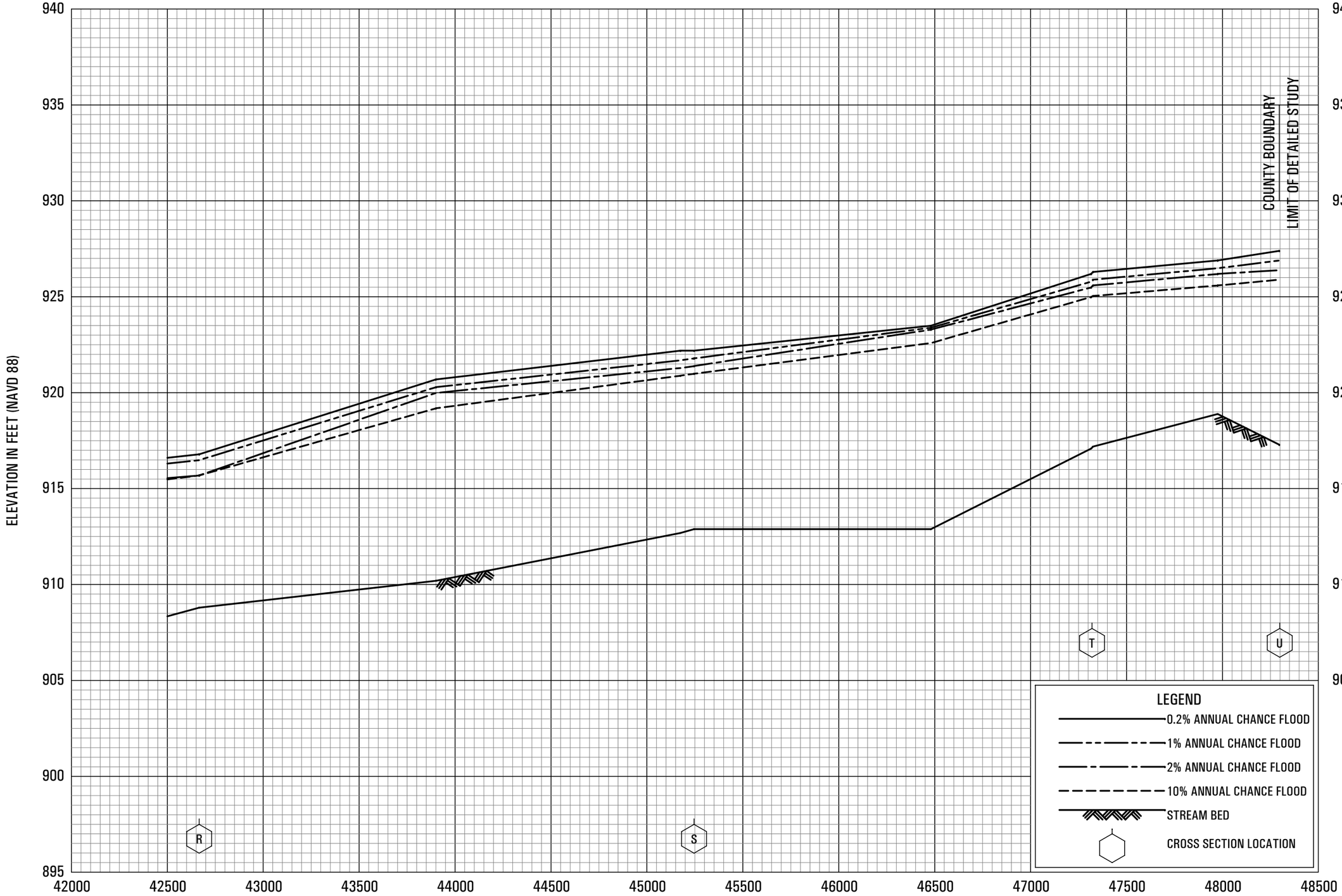
SIX MILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

27P



FLOOD PROFILES

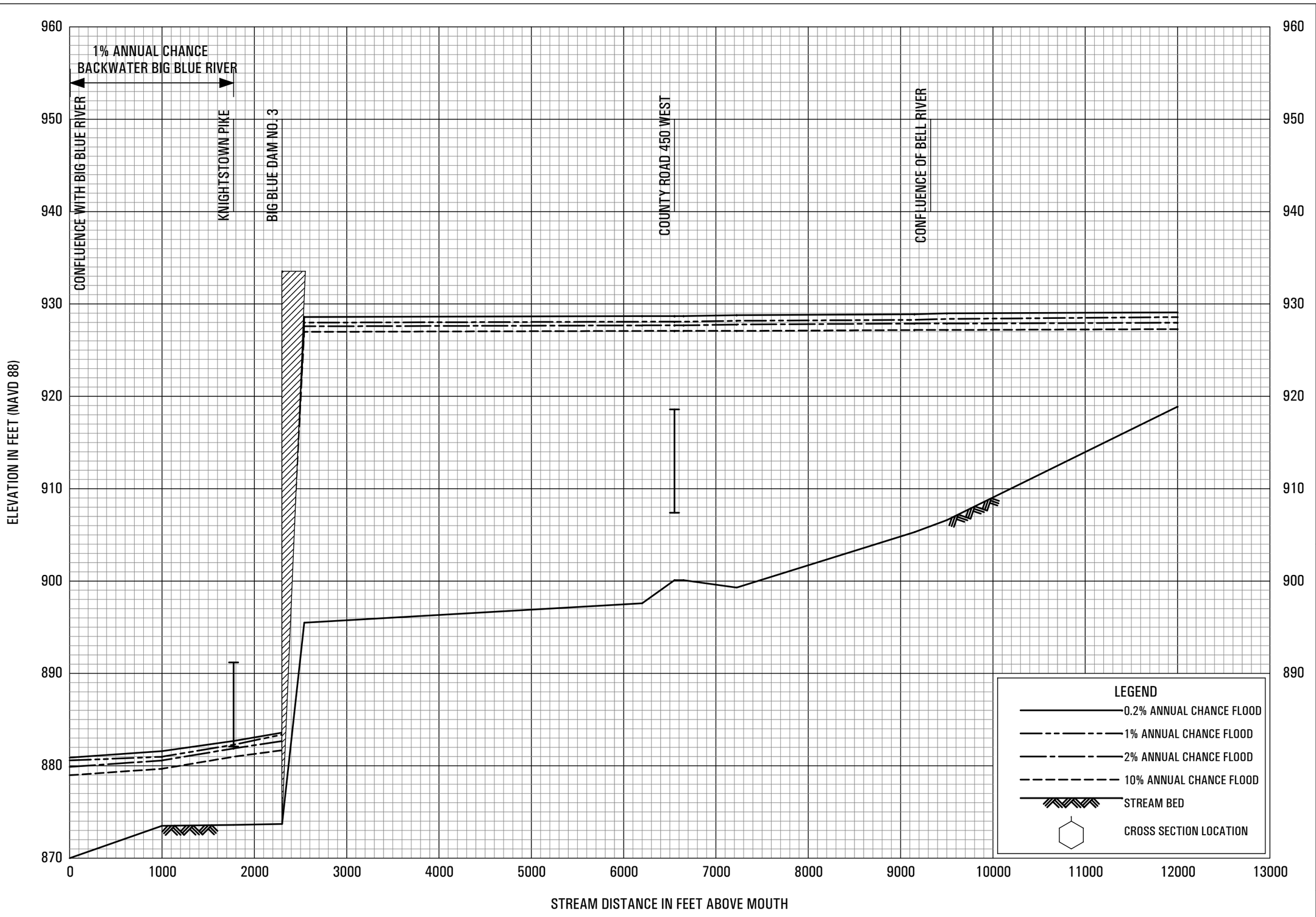
SIX MILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

28P



FLOOD PROFILES

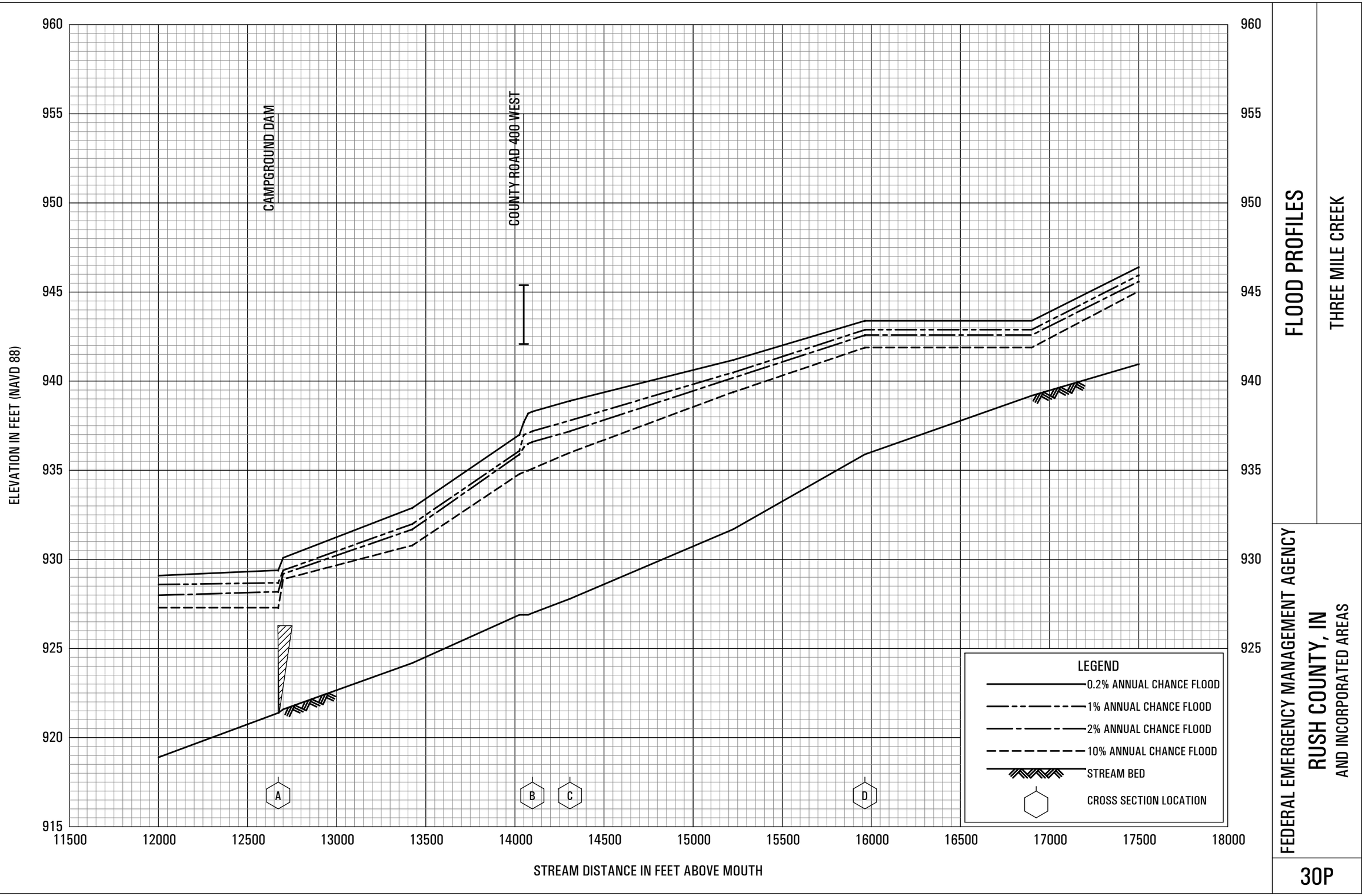
THREE MILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

29P



FLOOD PROFILES

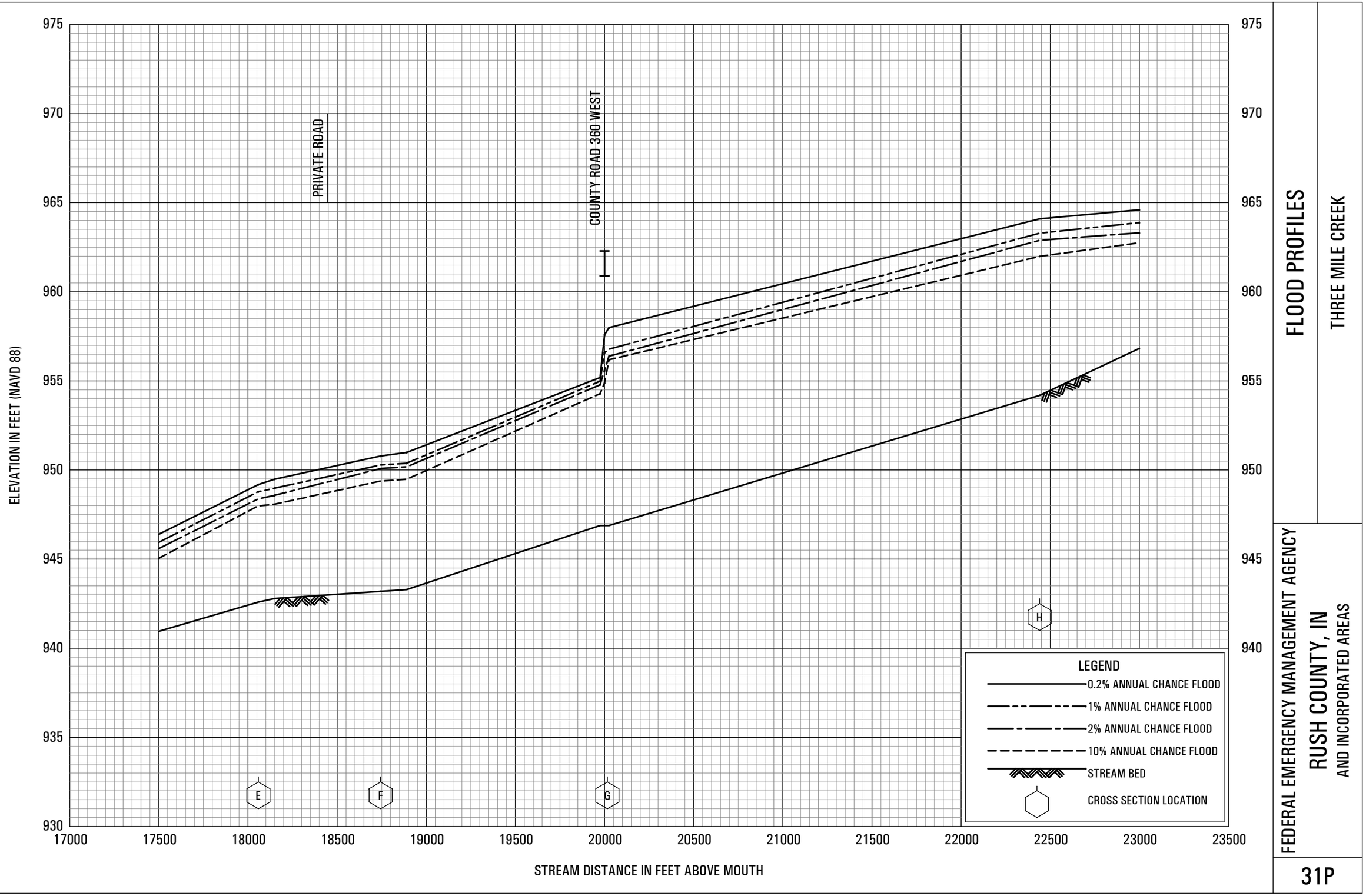
THREE MILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

30P



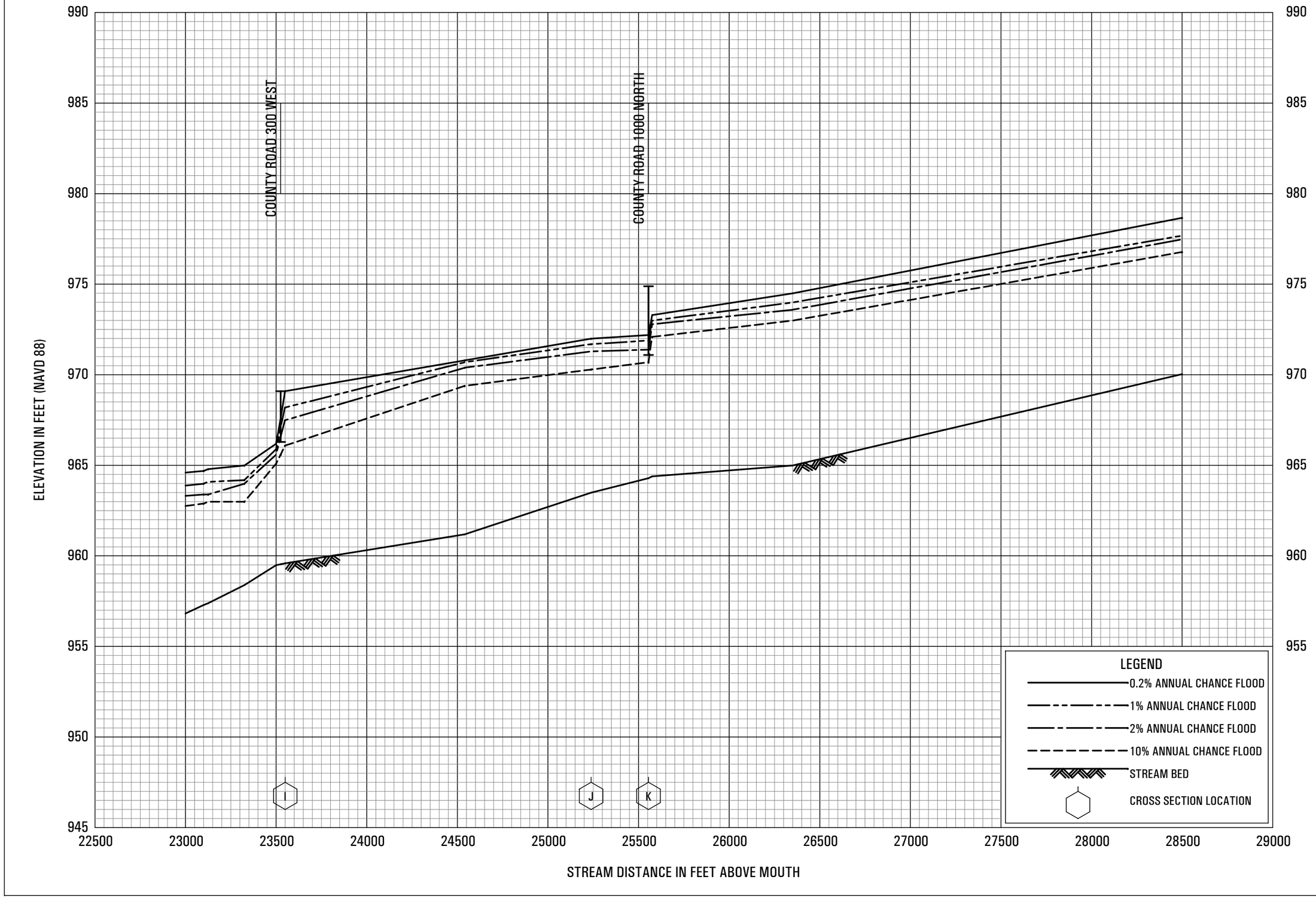
FLOOD PROFILES

THREE MILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

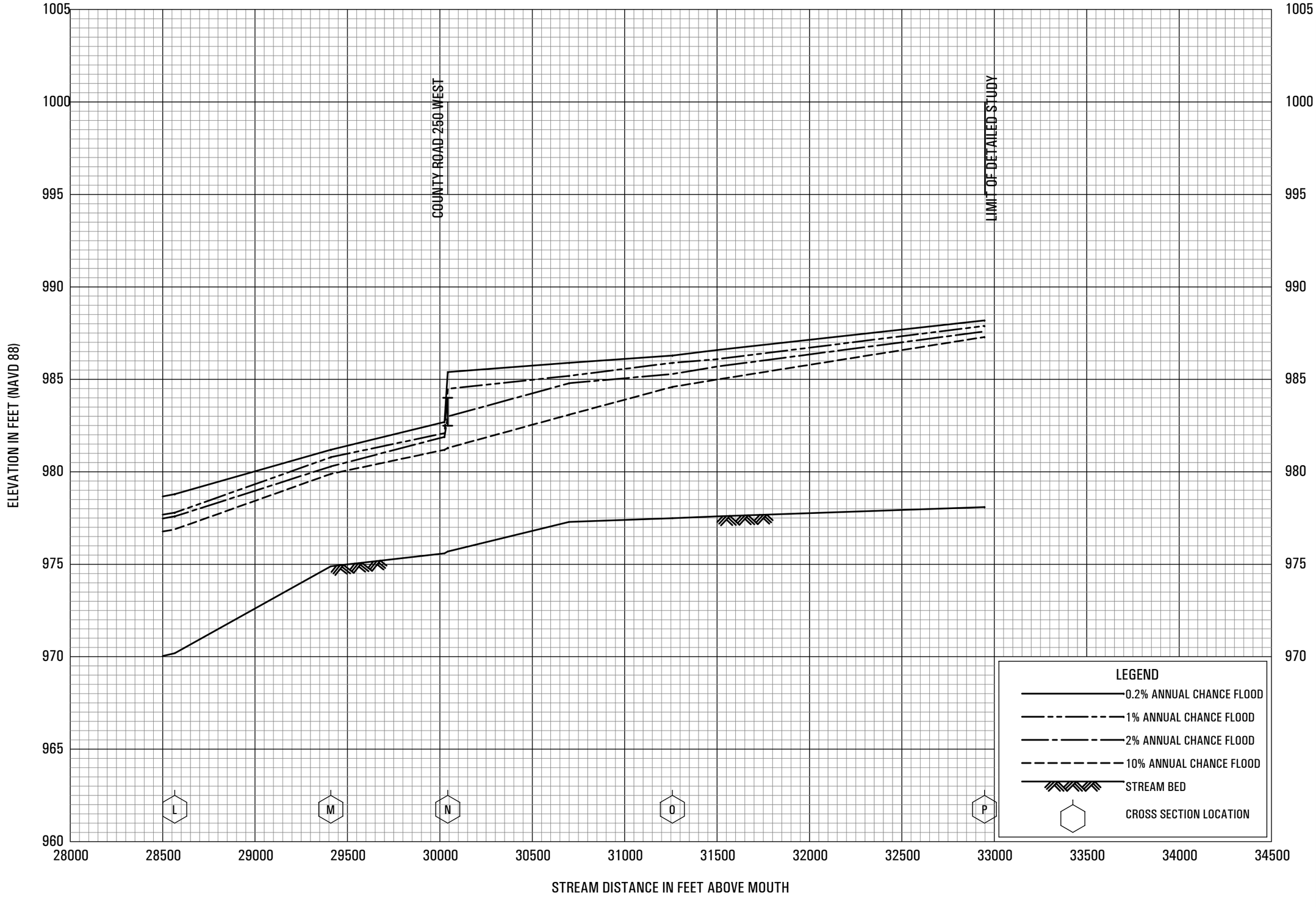
THREE MILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

32P



FLOOD PROFILES

THREE MILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

RUSH COUNTY, IN

AND INCORPORATED AREAS

33P